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STATEMENT FROM SECRETARY HAY

RELATIVE TO THE CONSTRUCTION OF VESSELS OF WAR ON THE GREAT LAKES—HE TELLS THE SENATE THAT THE JOINT HIGH COMMISSION WOULD PROBABLY HAVE REACHED AN AGREEMENT ON THE SUBJECT BUT FOR THE ABRUPT SUSPENSION OF ITS LABORS.

Washington, D. C., Feb. 28.—As explained in an interview with Secretary Hay of the state department, published in the Review some time ago, it is more than probable that the agreement of 1817 with Great Britain respecting naval vessels on the great lakes would have been so modified as to admit of the construction of the smaller class of vessels of war in lake ship yards—such of them as could pass through the St. Lawrence to the Atlantic seaboard—but for the suspension of the work of the joint high commission, which had under consideration recently various pending questions between the United States and Canada. In a statement just submitted to the United States senate Secretary Hay goes into this question in considerable detail. The statement is in response to inquiry made by Senator McMillan of Michigan. Secretary Hay gives a full history of the negotiations which resulted in the arrangement between Great Britain and the United States for disarming on the Great Lakes. He also directs attention to a history of its observance sent to congress by President Harrison, Dec. 7, 1892, and then says:

"An arrangement was reached between the governments of Great Britain and the United States on May 30, 1898, for the creation of a joint high commission, to which should be referred for settlement various pending questions between the United States and Canada, among which was a revision of the agreement of 1817, respecting naval vessels on the lakes. Instructions given to the American commissioners on the subject, as respecting the view of the government of the United States, were that it was desirable to secure a declaration or recognition that it was not contrary to the true spirit and intent of the arrangement of 1817 to build vessels of war on the great lakes or in its ports, provided they were not to be used or maintained upon those lakes. It was held that the evident meaning of the arrangement, especially when received in the light of the correspondence leading up to it, was that only such armed vessels as described should thenceforth be maintained in these waters.

"In 1817 the great lakes were independent inland waters. Lake Ontario was shut up by the rapids of the St. Lawrence river and Niagara; the lakes above Lake Erie were shut in by the rapids of the St. Clair river, and Lake Superior in turn was separated by the rapids of Sault Ste Marie. There was no navigable connection between them and the ocean. Under such circumstances, to build and arm vessels on the lakes meant to maintain them there, and to use them for no other purpose than as part of the permanent arrangement. The language of the treaty, therefore, was not improper at the time to convey the idea intended. Moreover, at the time of making the arrangement, the region of the great lakes was in a large measure an uninhabited wilderness. Today the lakes are highways for enormous traffic, and their ports are great centers of manufacture and industry, and can afford to the United States facilities not dreamed of in 1817.

"These lakes have among other things peculiar advantages for the construction of certain classes of war vessels, and their facilities in this respect are capable of large extension and development, which in the future may be of inestimable value to the United States. For these reasons the government regards it as entirely consonant with the spirit of the arrangement of 1817 to use those facilities and to do so upon a full understanding with Great Britain that its building of war vessels on the lakes is in no way hostile to the arrangement or intended to increase the permanent armament to be maintained there. The American members of the commission were therefore instructed to secure some arrangement whereby, under proper conditions, such vessels should be constructed and passed through the Canadian canals to the ports of the United States on the Atlantic ocean. It was likewise held that a proper construction of the treaty did not prohibit the maintenance on the lakes of vessels properly equipped for the purpose of training seamen and reserves in the middle states, and that the employment of a proper training ship is not necessarily hostile to the spirit of the treaty, and should be so declared. It is understood that some satisfactory progress was made toward the attainment of these ends, but the labors of the commissioners have been suspended without reaching a definite result."

THE DISABLED M'PHERSON.

The United States transport McPherson arrived in Hampton Roads on Saturday last in tow of the steamship Admiral Sampson, which picked her up early Friday morning 450 miles off Hatteras. She was towed on Sunday to the ship yard at Newport News and will be placed in dry dock to have her shaft repaired. Capt. Burne and the officers of the McPherson say that the towing done by the Admiral Sampson was the fastest they have ever seen. From the time she picked up the disabled ship until she reached Old Point the Sampson averaged ten knots an hour with the larger vessel in tow.

A newspaper despatch from Perth Amboy, N. J., carries a rumor to the effect that several Philadelphia capitalists have purchased a large tract of land adjoining the Philadelphia & Reading coal docks at Port Reading for the purpose of establishing a large ship building plant.

Secretary Long has written a letter to the house committee on appropriations in opposition to the proposition to transfer the hydrographic work of the navy to the coast and geodetic survey under the treasury department.

NEW REVENUE CUTTERS.

The treasury department has just opened bids for the construction of a new revenue cutter for the great lakes, but it has not been determined as yet whether the contract can be let under the appropriation, on account of the advanced prices that have entered into all materials for ship construction. In another part of this issue of the Review the department calls for bids on another cutter, a vessel to be located on the Pacific coast and for which proposals will be opened April 3.

The lake cutter will be a single screw steel propeller of about 620 tons displacement. Dimensions will be 178 feet long over all, 30 feet molded beam and 15 feet depth to the base line. The hull was designed by Capt. Russell Glover, the superintendent of construction. It will be built entirely of mild open-hearth steel. The practical test requires that the material must withstand bending transversely back on itself without sign of fracture. This grade of material has been found satisfactory in every way for use in the construction of the hulls of revenue cutters. The floor plates generally will be 18 inches deep next to the vertical keel, while in the engine and boiler space they will be extended up so as to form a part of the foundations for the engine and boilers. The outside plating up to the line of the main deck will be of steel, fifteen pounds to the square foot. The stem will be slightly ram shaped. The hull is divided into compartments by four water tight bulkheads. Quarters for the officers are located on the berth deck, aft of the engine compartments, and quarters of the petty officers and crew forward of the boiler compartment. The accommodations for the crew, as well as for the officers, are comfortable and every care has been exercised to make the conditions of life on board ship as pleasant as possible. To this end shower baths and running water have been provided for the crew.

Provision will be made for carrying a certain amount of sail, principally to be used for steadying purposes in a seaway. For this purpose there will be two steel masts each about 80 feet high above the main deck. The propelling machinery of the vessel, which is expected to give a speed of 14 knots at full power, was designed by Capt. John W. Collins, engineer-in-chief, who also has charge of the electric light, sanitary and steam heating systems and the inspection of all material. The vessel will be fitted with steam steering gear, steam windlass, fire and flushing pumps, so as to make it thoroughly efficient in every way.

BUILD SHIPS AND CHANNELS FOR THE FUTURE.

Although he does not figure prominently in annual meetings of the Lake Carriers' Association, or in places where talk is required, Capt. Geo. P. McKay, treasurer of the lake association of vessel owners, has always been a quiet worker in matters that require the approval of congress or the departments at Washington. He has always favored the improvement of channels and harbors on a very broad scale, just as he has urged the construction of larger ships than have at times been built by the interests with which he is associated. In writing recently to Congressman Burton, chairman of the rivers and harbors committee, relative to a change of breakwater plans at Cleveland that will cause the east breakwater to deflect towards the shore, thus reducing the enclosed area, Capt. McKay said: "In all work of this kind we ought to build up to present necessities and look to the future so far as we can. We have just launched in Cleveland two steamers for the American Steamship Co. that are each 500 feet long and of 9,000 net tons capacity. Two other similar steamers are in process of construction. Such is the character of the coming freighter. In addition we have already in service a great fleet of vessels of 400 feet and upwards. Take for example the great Poe lock at the Sault. General Poe asserted positively, and we all just as positively believed, that that lock, 800 feet by 100 feet, would accommodate four of the largest vessels at one time, two in length and two in breadth, but before the lock was completed a number of vessels were trading to Lake Superior of which the lock could only accommodate two at the best, and even two such boats as are now being built, and will be in service the coming year, could not lock through at the same time. We would be unable in the coming season to care for the commerce of the St. Mary's river if it were not for the assistance that will be provided by the Canadian lock. In view of this I hope you will do all you can to have the shore deflection of the breakwater changed. If it is necessary to deflect either way, let that be out in the lake rather than toward the shore."

NEW SPANISH PURCHASES.

Washington, D. C., Feb. 28—Naval officers are delighted with the acquisition of the Spanish transport General Alava and the gunboats Quiros and Villalobos. All three are modern vessels built within the last five years. They are particularly adapted for service in the waters of the Philippines. The Quiros and Villalobos are sister ships and are described as composite single-screw gunboats. Both were built in Hong Kong—the Quiros in 1895 and the Villalobos in the following year. Each is 145 feet 4 inches long, 22 feet 10 inches beam and of 347 tons displacement. The draught is not known but the displacement shows that it is light enough to render the vessels available for service in the lagoons and rivers of the Philippines. The indicated horse power of each is 500, capable of driving the vessel 12 knots an hour. Engines are of the triple expansion type. The armament, which Gen. Otis says was purchased with the ships, consists of two six-pounder quick-firing rifles and two five-barreled Nordenfeldt machine guns.

The General Alava is a single screw steamer rated as a transport and built for carrying an armament. She was constructed at Dumbarton, England, in 1895. She is of steel, has a single screw, is 212 feet long, 29 feet 8 inches beam, has a mean draught of 18 feet 8 inches, displaces 532 tons and is fitted with triple expansion engines.

BRIGHT OUTLOOK ON THE PACIFIC.

DEVELOPMENT OF SHIP BUILDING ON THE WEST COAST, AS VIEWED BY ONE OF THE BUILDERS OF SAN FRANCISCO.

Mr. George E. Billings, manager of the ship building firm of Hall Bros. of San Francisco and Puget sound, has contributed an article to the San Francisco Examiner on the wonderful development of the ship building industry on the Pacific coast. In the course of the article Mr. Billings says:

"The year that has just passed has been the greatest in twenty years in the history of ship building on the Pacific coast, and the year 1900 will surpass it. Every yard, from San Francisco to Puget Sound, has had all the business it could possibly turn out. Freights on the coast were never better than at the present time, there being a scarcity of vessels to supply the demand. This condition of affairs will continue as the year advances, and notwithstanding that new sailing craft is being turned out as fast as possible, it will be harder than ever to supply the demand.

"The causes for this state of affairs are various, the principal one being found in the war. Only a few years ago Oakland creek was crowded with steam schooners, whose owners were unable to get a charter for them. Lumber had become almost a drug on the market, and big schooners and barkentines built on the coast were chartered for deep-water voyages. With this condition of things in force came the Klondike strike. Then everything that could carry steam or sail immediately fitted out for St. Michael. Eastern companies, with big steamers lying idle on their hands, were not going to stand by and see the Pacific coast enjoy a monopoly of what promised to be an immense business. The result was that all sorts of craft, from big ocean-going steamers down to small schooners, came sailing around here from the Atlantic side. The Klondike trade petered out before a number of these vessels got a chance to start for the north, and when the war with Spain broke out, there were any amount of nondescript craft on the beach, both here and at Puget sound. It seemed hardly possible that berths could be found for all of them. No one, even the wisest of shipping men, could foretell the wonderful development of the transport service. But it soon became evident that San Francisco was the open door of the United States to the Philippines. The demand for tonnage became greater as the days went by, and the list of available craft was soon exhausted. With Honolulu as a stopping place, it was made possible to send even steam schooners across the ocean, a feat hardly dreamed of at the outbreak of the war.

"The trade with the Hawaiian islands, since annexation, has increased remarkably. Notwithstanding that there were a number of vessels put under the Hawaiian flag just prior to annexation, with the end in view of securing American registration, the demand for tonnage to the islands is still unsatisfied. New plantations are being opened up and older ones are being developed. Lumber, machinery and general merchandise are being shipped from here as fast as cargo space can be obtained for them, and still more vessels are being built for the trade. When the laws in the Philippines are put into satisfactory shape, vessels will be required for that trade. In fact, there has been already a move in that direction. Four cargoes of lumber have been shipped to Manila from the coast, and the time will come when there will be a procession of vessels heading in that direction. Our trade with the Orient has increased, and is increasing. The regular lines of steamers refuse freights at every sailing. The tramp steamers cannot satisfy the demand and sailing vessels are pressed into service to make good the deficiency. Japan ports are filled with our freight. In China, the English, German and Russians, besides the Chinese, are our patrons. To these ports are shipped large quantities of salt, flour, lumber, grain, agricultural implements and the like, and another good market is opening up in Nicolaefski and Vladivostock, in Siberia. Freights to Australia have not been as high in ten years past, and the same may be said of the Orient.

"There is not a port in the Pacific to which our vessels are not finding their way. This state of things means many millions of dollars to the harbor, which goes out to the benefit of the entire coast. The fine rains we have had give promise of a golden year for our products, and the latter will find a ready market. True, the transport rush is at an end, and many steamers chartered by the government are being turned over to their owners as fast as they arrive from the Philippines. This has been going on for some time, yet no complaint has been heard. Quite a number of these returned vessels have already found other employments, and the others will be readily chartered.

"Great preparations are being made here and in the sound ports for the coming season at Cape Nome. The boom of the northern diggings overshadows that of the Klondike two years ago. Thousands have caught the gold fever, and people of all sorts and from all conditions of life, are getting ready to go to Nome as soon as the way is opened through the ice. One hardly realizes what this means until brought face to face with the proposition. The thousands who rushed into the Klondike faced all kinds of hardships and danger—from shipwreck in the inland passages to Skaguay to death by exposure on the icy trails. There is nothing of this sort to be encountered on the way to Nome. The prospector is landed at his destination from the same steamer on which he embarks, instead of being compelled to make several changes. This means that everybody will go by sea, and taking the rush to Dawson as a basis of calculation, it is safe to say that there are by no means enough steamers to carry the crowds. Steam schooners and all sorts of available craft will be pressed into the service, and there will be another great scarcity of tonnage on the coast. How long the Nome boom will last, no one can venture to predict. What will become of our ships when it is at an end? That same question was asked when the transport service was in the throes of its maddest rush. Well, the decline of that business leaves us at the dawn of the greatest commercial era we have ever known. It is intended that one transport shall leave San Francisco for the Philippines every fortnight, loaded with freight. That gives us four more vessels carrying our goods to the Orient than there were before the war. The trade with the Orient has but begun; that with the Philippines cannot be said to have started. When Honolulu has been ridden of the plague, a new impetus will be given to the commerce with the islands. Indeed, the plague has had the effect of opening up direct communication with other ports in Hawaii, and at every hand we see signs of increasing prosperity.

"The Kosmos line, plying its steamers between this port and Hamburg, by way of Central and South America, will, in time, open a vast territory to the producers and manufacturers of this coast. The business now held in Europe, and which, for geographical and other reasons, belongs to us, is bound to come our way. We have not yet begun to derive any benefits from the war in South Africa, but over there is another good market being rapidly developed for us. I see a very bright future for the shipping and ship building industry of this port."

Mr. Billings presents in connection with this article a table giving particulars of some twenty merchant vessels built for San Francisco owners within the past year by builders at different points in California. Included in the number are nine screw steamers and four stern-wheel steamers. Ship builders included in the list are J. O. B. Gunn of San Francisco, Sidney Newell of Stockton, A. M. Wilson of San Francisco, Alexander Hay of Alameda, William Munder of San Francisco, F. E. Emlay of Fort Bragg, William McKenzie of Oakland, M. Turner of Benicia, H. D. Bendixen of Fairhaven, H. E. Wright of Stockton, W. F. Stone of San Francisco, and George Ross of San Francisco.

A PREDICTION FROM CAPT. MAHAN.

Capt. A. T. Mahan indulged in some very interesting predictions at a banquet held in New York city a few evenings since. The eminent authority on naval strategy took the following sentence as the text of his remarks: "It is, however, in these wider operations which embrace a whole theater of war, and in a maritime contest may cover a large portion of the globe, that the teachings of history have a more evident and permanent value."

"I wrote that fifteen years ago," said Capt. Mahan. "How singularly and providentially events are showing what sea power is to be in the development of the world. Here we have had two wars with a peace conference in between. The United States was pitchforked unwillingly into the Philippines. It is impossible for us to stay there without a consideration, and a serious one, of sea power. The United States is committed to a development of sea power unthought of when I wrote the words I have read to you. It is committed to a development of sea power by the Nicaragua or Panama canal, which ever it is to be, unless there is to be a complete change of policy.

"Whatever the issue of the war in South Africa, Great Britain is to be a greater power than it could ever have possibly been before this war took place. People speak of mistakes, but what is the fact? When this war is over Great Britain will be able to transmit to any part of the world more rapidly than ever before, a great force. It will be a land force, but it will be moved by the sea, and to an extent never before possible.

"Now take these two events. The United States forced to become a sea power (and even the election of Bryan cannot take us out of the Philippines), and Great Britain's fight in South Africa. I venture, after considering them, on the prophecy that the world's struggle is going to be divided between the power on the land and the power on the sea. I do think that this is something for you all to think of—the singular effect of two wars in the development of the sea power of the two great English-speaking nations."

PROGRESS WITH A NEW SHIP YARD.

The New York Ship Building Co., which is establishing an extensive works at Camden, N. J., has been quietly making most rapid progress toward completion of the undertaking. The officials, engineering and clerical forces of the company have moved into the large two-story brick office building at the plant in Camden and have permanently established the company's headquarters there. The offices are on the first floor and the force of engineers and draughtsmen have fine, commodious quarters with ample light on the second floor. This is, of course, the first building to be completed of the dozen or more which have been under construction since last autumn. The mild weather has made it impossible for work on all the structures to advance rapidly all winter. There have been very few days when outdoor work had to be wholly suspended because of the cold and only brief periods when ice in the Delaware river interfered with the operations of the wharf and dock builders. As a result, it is expected that the company will be ready to begin the actual work of ship construction by May 1. Indeed, it is stated semi-officially that plans for a large steel steamer have been in preparation for some time and that the work of construction will begin early in the spring. It is also understood that the company will bid on the next naval order for which the United States government invites bids.

NEW DRY DOCK AT NEW YORK.

The dry dock for which the Morse Iron Works & Dry Dock Co. has just purchased a site at Bay Ridge, near New York city, will be the largest dry dock in the United States. It will be almost twice the size of the dock now being used at the plant of the Wm. Cramp & Sons Co. and will accommodate with ease the largest vessels in the world. Mr. Morse says that contracts for all the material, with the exception of lumber, have already been placed and that 1,500 men will be put to work at once driving piles and erecting the workshops and electric plant. The electrical operation of the dock will be a new feature. A man at a switchboard will simply have to press a button and the gates will be raised and the pumps set in motion automatically. Even the scraping of vessels will be done by a new electric system. Mr. Morse says that although the dry dock will be the largest in the country, it is not the intention of the company to stop at that and within the next two years the dock will be doubled in size, making it the largest dry dock in the world.

The ship building firm of William Crichton & Co. of Abo, Finland, is preparing to make extensive improvements in its works and will require a number of large tools. The question of early delivery is one of the most important involved, and ability to meet demands in this direction, will, it is said, increase the chances of American manufacturers securing the greater part of the contract.

NO RADICAL CANAL MEASURE.

POWERS IN NEW YORK STATE HAVE ABOUT GIVEN UP THE IDEA OF IMPORTANT CANAL IMPROVEMENTS AND ENTHUSIASM IS AGAIN SUSPENDED.

Buffalo, Feb. 28.—The critical point with the canal question, so far as this year is concerned, has arrived, and possibly for any future year. Although the powers that be in Albany have pretty nearly given up the idea of pushing the $62,000,000 measure through the legislature this session, there are still people who hope to see it done and they may yet prevail, though it must be confessed that it does not look very much like it now.

The canal boatmen are pretty nearly discouraged and are given, as they are in other matters, to kicking on general principles when things do not go their way, so they say that it is all politics that is holding the measure back in Albany. What they are mainly afraid of is that the delay will be so long drawn out that the tonnage will practically disappear and the canal will die while it is being brought back to life. So far they are right, for the lack of boats was the main reason for the poor show of business last season.

Still there are difficulties, and serious ones, confronting the friends of the canal, which the most zealous advocates of improvement see as well as the practical politicians do, and which it will not answer to ignore. It is feared that to make so many redical changes of the route as is proposed by the new plan will make a new canal of it and interfere with the constitutional mandate against abandoning the canal. Although such an objection might be classed as technical, it is real enough in the minds of certain good men and true to cause them to hesitate. They feel in the first place that it will not answer to make any such blunder as was made before, if the people are going to ratify the measure. Then the question of dual control of the work, both the superintendent of public works and the state engineer at the head of it, and each seeking to throw the responsibility for laxity or failure on the other; there must be nothing of that sort now, so a commission or an advisory board is thought of.

It is curious to find that there is a large growth of sentiment in favor of government control of the canal and of course of government support and enlargement of it. Even those who have been the most strenuous opponents of this idea, on the plea that congress would never do anything for it, are now saying that it might be the solution of the problem. It is known that the lake region wants the canal kept up and all that section would vote for such a measure, while from the south comes the admission that it would never do for a section in need of so much special legislation of the same sort to oppose the Erie canal if the government should take it up.

Then there is the modified idea, which readily catches the canal man, no matter how he stands on general principles, and that is to ask the government to contribute to the support of the canal without obliging the state to give up the control of it. This would be help without interference and could be urged on the ground that the government never assumes control of any rivers or harbors just because it has done work in them, but always on the general idea of the superior authority in regulating navigation. It is quite likely that some undertaking of this sort will be made, especially if the whole matter goes over till next year. And right here it is found that the time for doing all this work is about gone. A public man said today that while a bill could be framed and pushed through the legislature in ten days, it was a very risky thing to do, there were so many things to think of. He was afraid that the matter of time alone would be fatal to such an undertaking. Every blunder and every needless step affords material to the opponents of the canal, and all of which must be looked to.

As to the temper of the people it is not believed by the friends of the canal that any serious apprehensions are warranted. It is known that such opposition as is forthcoming will be sharp and active, but the appeal to the sovereign pride of the Empire state has never been made in vain, and it will not fail now, if made intelligently.

The Erie canal is languishing, but not dead. It is felt that while a partial measure, such as the completion of the old $9,000,000 plan, would be well, it would be better to adopt the fuller measure, even at cost of wearisome delay.

JOHN CHAMBERLIN.

A MODEL LIFE SAVING STATION.

The United States life saving service will shortly let contracts for the erection at Cleveland of a life saving station that will represent the best practice of the service in construction, arrangement and equipment. The station will, of course, be entirely of wood and 68 feet in length by 19 feet to the upper ceiling. The boat room will be 23 by 40 feet, while the living rooms will have an aggregate width of 35 feet. Adjoining the boat room will be a workshop, 12 by 15 feet. The keeper's side of the building will be divided on the ground floor into kitchen, mess room, office, and several closets. On the second floor, over the boat room, will be located the crew's quarters, with a full equipment of lockers. Over the keeper's apartments on the main floor will be bed rooms for the keeper's family, and a watch tower of sufficient height to command a good view in all directions will be located in the center of the building.

The station will be as large as any in the country and in many respects will contain improvements over all the others, especial plans having been prepared for it. The original plans contemplated the provision of sleeping quarters for the men over the keeper's side of the building. By the alteration the entire structure is made two stories in height, and not only are more commodious quarters provided for the keeper's family, but the crew is located in a position more convenient to the boat room. A sliding pole, such as is used in fire department houses, will be provided and in case of emergency the men will thus be enabled to save considerable time in manning the boats. Adjoining the main building will be a boat shed, 26 by 37½ feet. Bids for the construction of the building range all the way from $8,000 to $15,000.

Central Passenger Association mileage tickets are accepted for passage on all trains of the Nickel Plate road. 31 Mar. 16.

NAVY NEEDS MORE MEN.

OFFICERS AND SEAMEN LACKING FOR THE FINE NEW BATTLESHIPS—A STATEMENT FROM SECRETARY LONG.

A state of affairs exists in the United States Navy which will doubtless prove astonishing to European naval powers. In a report transmitted to congress a few days ago, the secretary of the navy explains that the navy is so shorthanded in officers and men that new vessels nearly ready for service cannot be put into commission without withdrawing other ships from active duty, and even then the new vessels, like those now commissioned, must go to sea with complements too small for the best interests of the government. The ships in commission are manned by 1,062 officers and 14,996 enlisted men. The full complement is 1,272 officers and 22,181 men. There is absolutely not one man now in the service available for the big battleships Kearsarge, Kentucky, Illinois, Alabama and Wisconsin, which will be ready to be put into commission between now and June. Each of these big ships needs at least 460 men. If they were in European navies their complement would be more than 600 men. American ships, however, are manned by smaller crews.

Admiral Crowninshield of the bureau of navigation, who prepared the report, says that 212 officers are required for the ships, which, if an emergency should arise, could be made ready in thirty days, making a total of 1,484 officers to man the ships now in commission and those which should be in active service. For the ships that it would take more than thirty days to put into commission, and those under construction, 863 officers and 10,298 men would be required, bringing the grand total of enlisted men to 32,933 and officers 3,084.

There are sixty-one ships authorized and under construction, which, if put into commission as fast as completed, would require an increase of officers in the various grades as follows: Rear admirals, 4; captains, 28; commanders, 10; lieutenant-commanders, 91; junior line officers, 432; medical officers, 38; pay officers, 38, and warrant officers, 226, a total of 867.

Of the sixty-one ships, thirteen are battleships, ten are armored cruisers and six are protected cruisers. The five battleships that will be added to the navy before July 1 cannot be put into commission except by taking officers and men from other ships and laying these up in ordinary. As the five battleships will more than double the fighting capacity of the navy, it is certain they will be put into commission as soon as possible. The chief remedy suggested to put an end to the shortage of officers is an increase of 100 cadets at Annapolis each year. To induce men to enlist, each, it is recommended, should receive free an outfit worth $75.

SHIP BUILDING IN JAPAN.

An increasing degree of attention is being paid to the great Japanese ship building plant at Nagasaki as its products attain to increasing prominence in the shipping world. Within the past two years no less than seven modern sea-going steamers of large size have been turned out at the yard. The first of these was the Hitachi Maru. She is a steel steamer and was launched on April 16, 1898. She is 462 feet in length over all, 49 feet beam and 33½ feet depth, and is fitted with triple expansion engines, to which steam is supplied from four boilers and which drive her at a speed of 14½ knots per hour. The Awa Maru, which was launched last July, is 452 feet in length. She is a twin-screw vessel and capable of making 12 knots. A third steamer of this class has just been completed. The other ships turned out while of a somewhat less pretentious character are nevertheless very creditable vessels.

The Nagasaki yard is the property of the Mitsubishi Co., at the head of which is Baron Iwasaki, a multi-millionaire whose wealth is estimated at $70,000,000. The active management of the yard is, however, in the hands of F. J. McCormick. Ship ways are provided so that vessels of 500, 350, and 250 feet in length respectively may be built simultaneously. The equipment of the plant includes the most improved types of shearing, bending, rolling, punching and hydraulic riveting machines, together with all kinds of wood working machinery. The blacksmith shop is supplied with steam hammers ranging as high as 7 tons, and the foundry, which is 172 by 100 feet, is equipped with two hydraulic overhead traveling cranes of 15 and 30 tons respectively, with a height of 24 feet clear below the traveling crane girders. The erecting shop also has 15 and 30-ton cranes, as well as several of less capacity. There is a steel shear legs capable of handling 100 ton lifts, and a complete outfit for diving and wrecking work.

WORK RESUMED AT NAVY YARDS.

The deficiency appropriation bill having passed, the navy department is now in a position to resume work upon the naval vessels at navy yards which was suspended for want of money. The bill appropriates $2,500,000 for this purpose. As a result, orders have been issued to resume work at the navy yards and many men will be employed. At the Boston yard there are the Olympia, Topeka, Chesapeake, Vesuvius, Sterling, Peoria and some tugs; at Portsmouth, N. H., the Raleigh; at New York the Indiana, Massachusetts, Cincinnati and several torpedo boats; at Norfolk the Newport, Annapolis, San Francisco, Terror, Puritan, Reina Mercedes and some converted yachts and tugs; at League Island the Miantonomah, Minneapolis, Columbia and Katahdin; at Mare Island the Boston, Philadelphia, Mohican and Alert.

A decidedly encouraging report was laid before the stock holders of the Richelieu & Ontario Navigation Co. at the annual meeting held at Montreal a few days since. The operating expenses for 1899 were about $674,000, an increase of some $85,000 over the year previous, but on the other hand the gross earnings were increased almost $100,000. The net profit for the year is $128,000, as against $112,000 in 1898. Praise is given in the report to the speed and economy of the company's new steamer Toronto, which was built by the Bertram Engine Works Co. of Toronto, and which is fitted with the Howden system of hot draft. It may be mentioned in this connection that a rumor is current to the effect that a contract has been given to the Bertram company for another steamer.

AMENDED SHIPPING BILL.

CHANGES IN THE MEASURE ARE PRACTICALLY THE SAME AS REPORTED TO BOTH HOUSES—PROVISIONS OF THE NEW BILL AS EXPLAINED BY SENATOR FRYE.

WASHINGTON OFFICE MARINE REVIEW, 1345 PENNSYLVANIA AVE
WASHINGTON, Feb. 28, 1900.

After two weeks of discussion the house and senate committees, which have the shipping bill under consideration, have practically reached an agreement upon the measure. Both senate and house bills are now practically identical. The outlook for the passage of the bill is brighter than it has been at any time during the session. There is practical unanimity upon the details of the bill and there remains therefore simply the broad question of subsidy or no subsidy. Representative Minor, who led the minority against some of the provisions of the Frye-Payne bill repeatedly declared that the minority was not opposed to the principle of subsidy, but merely to the method of its application. He introduced a new shipping bill into the house last week.

The senate committee on commerce reported to the senate on Tuesday of this week a bill materially changed from the measure which Senator Frye introduced during the first of the session. The Frye bill provided for a subsidy period of twenty years for American vessels registered for foreign trade. This has been changed to correspond with the Minor bill, which allows the subsidy to go to a vessel built prior to Jan. 1, 1900, for only ten years, and to a vessel built after Jan. 1, 1900, for twenty years. The cargo clause is identical with that of the Minor bill, requiring vessels to take each time they leave the United States on a foreign voyage 50 per cent of their cargo capacity in tons of 2,240 pounds each, or 40 cubic feet of space.

In response to a request that he explain the provisions of the new measure as reported to the senate, Mr. Frye, chairman of the commerce committee, said that substantial modifications had been made with four distinct purposes in view, namely:

First—To particularly encourage the building of new ships in the United States.

Second—To induce our citizens to construct freight carriers.

Third—To attract present and prospective American ship owners to the exceptional opportunities upon the Pacific for the development of American trade.

Fourth—To compel vessels to carry at least half cargoes each time they leave the United States on a foreign voyage, their compensation being reduced in proportion to the extent that they fail to carry such cargoes.

"The bill as it now stands," said Mr. Frye, "limits the period of compensation to ten years for existing vessels, while doubling that period for vessels hereafter constructed. That gives owners of existing vessels a chance to share the benefits of the bill just long enough to enable them to keep up with the progress of the times and the needs of our growing commerce by themselves taking the lead in new constructions. The object is not unduly to favor present owners but to encourage those who have had the pluck to stick to the business through all these years of adversity, to apply their experience and courage to its rapid expansion. To upbuild our merchant marine we must necessarily depend upon the ability, experience and resource of those of our citizens now engaged in the foreign trade. It is desired to encourage in every way possible investment on the part of others now unfamiliar with shipping, and it is believed that this can best be accomplished by making possible the success of those now engaged in the business. By withdrawing compensation at the end of ten years from vessels now in existence and continuing it for twenty years to those hereafter built it is expected that the most modern and economical vessels, and only those, will find it attractive to continue in our foreign trade. This will also insure the carrying of our exports at the minimum of cost and the maximum of efficiency.

"Without going into the figures of the compensation in detail it is enough to say that the compensation provided will no more than make good the difference in the cost and in the operation of American ships in competition with foreign ships. A limit of not to exceed $2,000,000 is placed upon the annual payment to vessels of over 20 knots speed. I look for such fierce rivalry between American and foreign vessels, the former to obtain and the latter trying to hold the business, as to materially reduce rates of ocean transportation for years to come, and to fix permanently a much lower rate than at present through the economics in construction and operation that competition will force upon all concerned.

"The provisions of the bill favor freight carriers at every point, rather than the fleetest and most powerful ships. This is in response to a sentiment, very general, that the commercial war upon which we have entered, and which will be fiercer in the future, demands the former in preference to the latter. It is recognized that the more rapid expansion of our export trade will be in the Orient. This will especially stimulate new lines of steamships from our Pacific ports to Asiatic countries. To make it particularly attractive, and also possible for our citizens to develop that trade with American-built ships, 30 per cent of the maximum compensation is reserved for our vessels upon the Pacific, while, of course, there is no limit to the extent that they may participate in the other 70 per cent. by increasing the number of ships in our foreign trade.

"During the last thirty-five years, while American ships have been more expensive to build and more expensive to run than foreign vessels, certain of our citizens have found it necessary to go abroad for their ships and sail them under foreign flags in order to compete on terms of equality with their rivals, which course, under proper government protection during that time, would have been quite unnecessary. It is estimated that some 200,000 tons of vessels of this character of ownership are now in existence, while about 100,000 tons of ships are now being constructed abroad for their owners. In order not to discriminate against these citizens now controlling a trade capable of great future expansion and in order to induce them to expand their trade with American built ships, provision is made for the admission to American register of foreign-built vessels owned by American citizens, on condition that they have tonnage built in American ship yards equal to that admitted to our register. Compensation is withheld until this new tonnage is built, and a forfeit of $10 per ton required if it is not built. This foreign-built tonnage that is admitted receives only one-half the amount of compensation paid to American-built vessels, and contracts are restricted to ten years in respect of existing vessels. All such vessels and their equivalent tonnage to be built in the United States are to be excluded from any participation in our coastwise trade. I should have said that compensation is also withheld from owners of existing vessels until they have had built in American ship yards tonnage equal to 25 per cent. of that which compensation is asked.

"One of the most important changes is that which compels vessels under contract to carry cargoes equal to at least one-half their gross tonnage on their outward voyages. It had been thought that such a provision would, under our treaties, require the extension of compensation to certain foreign ships in our trade but members of congress, who are eminent legal authorities on the precise terms of those treaties, say that such is not the case, and that this provision is in no sense synonymous with that suggested in the way of bounties upon our exports. This assurance enables us to so safeguard the provisions of the bill as to make it impossible—as it is in any event quite unlikely under the peculiar conditions of our foreign trade—for empty ships to be run only for the purpose of earning the compensation. Moreover this provision is expected constantly to stimulate our export trade.

"By placing a limit of expenditure in any single year at $9,000,000 and by so reducing the compensation to all vessels participating in the benefits of the bill as always to keep the expenditure within that amount after the tonnage becomes capable of earning more than the maximum sums, let us see what we do: We make it impossible for any type of ship to receive especial favor, and we prevent the monopoly of any class of trade, or route, by any line, or by any especial type of vessel. Should it appear that any class of ship, or any line, or any route was more remunerative, right there the greatest competition will center—a result sure to prevent the enjoyment of any undue favor by any ships, lines or routes. This is an entirely new and American feature, it being nowhere else in force. During ten years any American citizen or corporation may enter into contract with the secretary of the treasury for a period of twenty years to put on a line of ships, or class of ships, on any route, or in any trade, and obtain precisely the compensation his rivals receive, the number, size and speed of his ships being equal.

"It is my opinion that the immediate effect of the passage of this bill will be to insure within five years the construction of approximately half a million tons of new ships in American ship yards, to increase the efficiency of our shipping in the foreign trade at least threefold at that time, to largely and permanently reduce rates of ocean transportation, to thus increase our export trade, to eventually bring the cost of constructing ships as low in the United States as it is elsewhere, to place at all times at the immediate command effective ships and men, to have our mails carried free, and, gradually, and I hope rapidly, put an end to our payment of $175,000,000 to the foreign shipping doing our foreign carrying."

OFFICERS OF AMERICAN STEEL AND WIRE CO.

A list of officers of the American Steel & Wire Co., elected at a meeting of directors held a few days ago, is presented herewith: The principal changes are the election of A. Clifford as treasurer to succeed W. A. Green, and the election of A. M. Crane, heretofore assistant general manager, to be assistant to the chairman. J. W. Gates, chairman; John Lambert, president; Wm. Edenborn, first vice-president: I. L. Ellwood, second vice-president; P. W. Moen, third vice-president; S. H. Chisholm, fourth vice-president; A. Clifford, treasurer; T. P. Alder, assistant treasurer, New York; F. L. Watson, assistant treasurer, Chicago; C. S. Roberts, secretary; F. E. Patterson, assistant secretary, New York; O. Owen, assistant secretary, Chicago; C. A. Honecker, auditor; C. A. Vogt, assistant auditor; Wm. P. Palmer, general manager; Pam, Calhoun & Glennon, general counsel; A. M. Crane, assistant to chairman; J. S. Keefe, general traffic manager; C. L. Miller, general superintendent; F. H. Daniels, chief engineer; E. E. Stone, general purchasing agent; Chas. T. Boynton, general sales agent; H. S. Smith, assistant general sales agent, Chicago; D. A. Merriman, assistant general sales agent, Chicago; T. H. Taylor, assistant general sales agent, New York. District managers—Chas. Ranlet, manager, Worcester; H. G. Stoddard, assistant manager, Worcester; F. E. Patterson, manager, New York; W. H. Rowe, manager, Pittsburg; J. H. Price, assistant manager, Pittsburg; S W. Tener, assistant manager, Pittsburg; A. T. DeForest, manager, Cleveland; Robert Ney, assistant manager, Cleveland; J. H. Early, assistant manager, Cleveland.

The United States revenue cutter Onondaga has just sailed from Philadelphia in the hope of rescuing the Spanish steamer Minerva, now drifting about the sea in a hopeless condition with a cargo of 5,000 tons of iron ore. The vessel is bound for Baltimore. She was sighted on Feb. 21 by the British steamer Parana and taken in tow by that vessel. After two hours, however, the tow line parted, and a heavy rain storm having come up the vessels became parted. The Minerva is without coal and has not sufficient sail to reach any haven of safety. Some years ago the British steamer Renpor, while en route to Philadelphia from the Mediterranean with ore, lost her propeller and after drifting about for nearly forty days finally foundered. No more valuable craft than the Minerva from a salvage standpoint has been adrift in the Atlantic for years. The vessel with her cargo is valued at more than $300,000.

A builder's trial trip of the torpedo boat Goldsborough has resulted in an accident which will delay the final builder's test six weeks. When off Alkali Point, running at thirty knots, a shaft arm broke, disabling one engine. A new forging must be made in the east. Capt. Nicholson says that the accident does not prove the boat's construction faulty.

The battleship Kearsarge will be made the flagship of the North Atlantic squadron.

MISSING LINK IN EXPORT TRADE.

DIRECT STEAMSHIP COMMUNICATION IS WHAT IS WANTED—GREAT BRITAIN'S POLICY OF STEAMSHIP SUBSIDIES.

There is a Bureau of American Republics at Washington, and much is said in its publications and elsewhere about the necessity of extending our trade with all Central and South American countries, but only one steamship company has been subsidized by our government to carry even the mails to any of these countries, the Red "D" line to Venezuela. If we had adopted the policy of subsidizing mail steamship lines between our principal ports and the principal ports of Central and South America our export trade to those countries would have rapidly increased. Trade would have followed the flag. But today when we sell a steel bridge to one of our South American neighbors it must first be sent to Liverpool and thence to its destination. The missing link in our export trade of all kinds is direct steam communication with all parts of the world. With this link supplied there would be no temptation to compromise our protective tariff professions or to annoy friendly nations by injecting into our tariff legislation the thoroughly British policy of commercial treaties and so-called reciprocity. Our low prices and the excellent quality of our products would do the rest. They are even now accomplishing wonders.

The protective policy is still retained in those acts of the British parliament which every year grant large subsidies to British steamship companies, enabling them to carry the manufactures of Great Britain to every port in the world in competition with other nations. These subsidies are attended with many important benefits to British trade. In 1871 Judge Kelley said: "England's enormous annual subsidies to steamship companies are part of an ingenious system of protection by which she hopes to maintain a monopoly of ship building and the carrying trade. She thus pays part of the freight on foreign raw materials used by her manufacturers and the fabrics and wares they export. These subsidies amounted last year, as was stated by the chancellor of the exchequer in his speech of April 20, 1871, when presenting to Parliament his budget for this year, to £1,225,000, or over $6,000,000."

In 1885 John Roach said that from 1827 to 1840 England's carrying trade went from bad to worse, and that in 1837 "she began the policy of subsidy, straight-out subsidy. Samuel Cunard offered in 1840 to build a line of mail steamships for the North Atlantic, and his offer was at once accepted." Mr. Roach then states that Mr. Cunard built four side-wheel ocean steamers, and that he "got his contract of $413,000 the first year, and this was increased to $550,000 the next year. This was a subsidy, pure and simple, given to Mr. Cunard to enable him to establish and maintain his line, and increased that he might run his line not only without loss but at a profit." Mr. Roach further said in 1885: "In a report of the postmaster-general, dated July 20, 1870, I find this significant passage: 'By the terms of the contract concluded with the Peninsular & Oriental Steam Navigation Co. on Nov. 19, 1867, the subsidy to be paid the company is set down at £400,000 ($2,000,000) a year, with a stipulation, on the one hand, that whenever the annual income of the company from all sources does not admit of the payment of a dividend of 8 per cent. on the capital employed the subsidy shall be increased by so much—subject to a limit of £100,000 ($500,000)—as is required to make up such a dividend.' Here is not only a subsidy but a government guarantee of an 8 per cent. dividend to the company's stockholders."

The Glasgow Herald for Sept. 24, 1892, contains an elaborate article on "the balance-sheet of an Atlantic liner," in which, after summing up the cost of running these large vessels and the income from freight and passengers, the writer admits in the following words the direct payment of subsidies: "Another source of income in these large steamers is the cruiser subvention from the Admiralty. This equals from £17,000 to £18,000 per annum. For this sum the companies are prepared on an outbreak of war to hand over their ships to act as armed cruisers, for which, of course, they would then be handsomely paid. The Teutonic and Majestic have guns to be in readiness, and on high occasions these have been mounted. Then, again, there is the income from the mails."

The same paper for Dec. 17, 1894, said: "In 1840 the Cunard line, or, as it was then styled, the British & North American Royal Mail Steam Packet Co., was formed. It was to conduct a fortnightly steam mail service between Liverpool, Halifax and Boston, and the contract under which it served was for seven years. Seven years later the expansion of the trade with the states forced the British government to double the mail service, and with its subsidy increased from £81,000 to £173,340 per annum the Cunard company undertook the work. Since then the service has, with the exception of a momentary break in 1889, been continuous."

In commenting on the passage by congress in 1891 of the postal subsidy bill the London Engineering for March 13, 1891, says: "The senate and the house of representatives, which constitute the legislative houses of America, have passed what is called the postal subsidy bill, which may be more accurately described as a bill to subsidize American-built steamers. Originally there were two bills before the legislature, one of which gave bounties for ship building and the other subsidies for the carrying of mails. The subsidy was based on the mile run of the steamers, and it differs from that paid by this country in respect that the vessel must be of American build."

We could cite other proofs of the practice of the British government to subsidize its steamship lines. The subsidies above referred to were paid for mail service, these subsidies being largely repaid by the mail receipts on foreign and colonial postage. This superior mail service helps British trade in various ways, in addition to furnishing quick transportation for the products of British workshops.

Hon. William F. Prosser explains as follows in The United Service Magazine for April, 1896, the benefits which are thus reaped by British trade: "The policy of Great Britain has not only enabled her to increase her shipping industries and operations immensely, but, as she thus secures control of the mail service, she, at the same time, largely increases her mercantile and banking business, because merchants all over the world prefer to do their trading where the mail facilities are of the best character. Her steamers everywhere make it a point to accommodate their arrivals and departures to the convenience of the mail service. It is not unusual for English steamers to wait a day or two in foreign ports for the mails in order that British merchants may get the benefit of mercantile orders."

Germany, France and Italy have copied Great Britain's example in subsidizing mail steamship companies, and our own country has recently timidly entered upon a similar policy. We commend most earnestly the British Policy. This country needs subsidized steamship lines to increase its export trade a hundred times more than it needs reciprocity treaties. But this British policy is not a free trade policy, but a policy of protection. Great Britain can not with any show of consistency pretend that she has abandoned the protective policy so long as she pays large subsidies annually to her mail steamship companies for the extension, among other things, of British trade.

Colonel Prosser gives the following list of British and Continental steamship companies, with the number of their steamers, which were subsidized to a greater or less extent in 1896, the aggregate amounting to millions of dollars annually: The British India company, 103 steamers; Peninsular & Oriental, 36 steamers; Messageries Maritimes, 61 steamers; North German Lloyd, 66 steamers; Navigationze Generale, 106 steamers; Compagnie Generale Transatlantique, 66 steamers; Hamburg-America, 86 steamers; Wilson line, 86 steamers; Austrian Lloyd, 73 steamers; White Star line, 20 steamers; Cunard line, 26 steamers.—Bulletin of the American Iron & Steel Association.

MASTERS AND ENGINEERS.

APPOINTMENTS OF OFFICERS FOR SHIPS OF THE GREAT LAKES, SEASON OF 1900.

Goodrich Trans. Co., Chicago: Steamers—Christopher Columbus, Capt. Robt. Smith, Engineer George McLaughlin; Virginia, Capt. H. E. Stines, Engineer G. P. Roth; Indiana, Capt. A. Gallagher, Engineer R. Flint; City of Racine, Capt. J. Wilson, Engineer W. R. Patterson; Iowa, Capt. J. Raleigh, Engineer J. Buschman; Atlanta, Capt. Jos. Munger, Engineer W. J. Downing; Georgia, Capt. E. Carus, Engineer A. J. Smith; Sheboygan, Capt. C. T. Bronson, Engineer F. Neidert; Chicago, Capt. Berlin Sniffin, Engineer T. Dorey. Tug—Arctic, Capt. C. R. Thayer, Engineer G. Germanson.

Smith, Edward, Buffalo, N. Y.: Steamers—Samoa, Capt. John Isbester, Engineer Jos. Valley; Samuel Marshall, Capt. August Jean, Engineer John Sheehan; Thomas Cranage, Capt. John S. McNeil, Engineer Jos. Blanchard; City of Paris, Capt. E. D. Balentine, Engineer Wm. McDougall; City of Venice, Capt. Chas. Ainsworth, Engineer J. A. McDougall. Schooner—Samuel J. Tilden, Capt. John Burke.

Barry Line, Miles Barry, Mgr., Chicago: Steamers—City of Fremont, Capt. Edward Evans, Engineer Chas. Grobben; F. & P. M. No. 1, Capt. F. Pitman, Engineer J. Hitchcock; Gordon Campbell, Capt. L. Larson, Engineer Chris. Smith; City of Grand Rapids, Capt. Thomas Barry, Engineer Geo. Carr; State of Michigan, Capt. ———, Engineer Frank Barney. Schooner—Sophia Minch, Capt. G. Richards.

Arnold Trans. Co., Geo. T. Arnold, Mgr., Mackinac Island, Mich.: Steamers—Ossifrage, Capt. David Tallion, Engineer M. Madden; Elva, Capt. Chas. Mosher, Engineer D. Elliott; new steamer building, Capt. J. B. Mondor, Engineer P. Eustice; Islander, Capt. Wm. McCarthy, Engineer ———; Loraine L., Capt. ———, Engineer ———.

Lake Erie Transportation Co., A. W. Colton, Mgr., Toledo, O.: Steamers—S. C. Reynolds, Capt. I. C. Herrick, Engineer James Miller; George J. Gould, Capt. Walter M. Cottrell, Engineer Geo. A. Butler; Russell Sage, Capt. Geo. Burnham, Engineer Jos. Kohlbrenner; John C. Gault, Capt. Chas. H. Leutes, Engineer John C. Busted.

Cleveland & Buffalo Transit Co., T. F. Newman, Mgr., Cleveland: Steamers—City of Buffalo, Capt. W. H. Smith, Engineer Chas. Lorimer; City of Erie, Capt. Hugh McAlpine, Engineer J. Y. Rendall; State of Ohio, Capt. Alex. McLachlan, Engineer C. H. Donaldson; State of New York, Capt. John McAlpine, Engineer Wm. Steen.

Eddy, C. A., Bay City, Mich.: Steamers—E. C. Pope, Capt. John Burns, Engineer John Conroy; Selwyn Eddy, Capt. A. J. Mahon, Engineer Robt. Leitch; Penobscot, Capt. Geo. L. Stevenson, Engineer S. G. Cowell; City of Bangor, Capt. Wm. Cavers, Engineer Henry Annett.

Curtis & Brainard, Toledo, O.: Steamers—Cherokee, Capt. J. A. Ward, Engineer E. Lambert; Mohegan, Capt. W. Hagan, Engineer Jas. Regan. Schooners—Chippewa, Capt. John Davidson; Mingoe, Capt. A. Snelgrove.

Mitchell & Rowland, Toledo, O.: Steamer—Sachem, Capt. Thos. Ledden, Engineer ———. Schooners—City of Toledo, Capt. John Griffin; George B. Owen, Capt. Moore.

Crosby Transportation Co., Muskegon, Mich.: Steamers—Nyack, Capt. John Ackerman, Engineer Karl Hallberg; Naomi, Capt. Chas. Thompson, Engineer Alex. Currie.

United States & Ontario Steam Navigation Co., Wm. Wollatt, Mgr., Conneaut, O.: Steamer—Shenango No. 1, Capt. R. B. McLeod, Engineer E. Wood.

Ellis, Chas. H., Milwaukee: Steamer—Hilton, Capt. C. H. Ellis, Engineer Sherman Mann. Schooner—Grace Grummond, Capt. Edward Logee.

Mason, L. P., Saginaw, Mich.; Schooner—Rosa Sonsmith, Capt. Chas. Sonsmith.

Drieske, Wm. & Co., Chicago: Schooner—Ralph Campbell, Capt. Peter Hansen.

The order for engines to be used by the Havana Dry Dock Co. in connection with the large dry dock to be installed at Havana, Cuba, has been placed with Houston, Stanwood & Gamble of Cincinnati. The Havana company will invest $400,000 in a dry dock which will be capable of accommodating vessels up to 6,500 tons.

AUXILIARY NAVAL VESSELS.

BOARD OF INSPECTION AND SURVEY DISCUSSES RULES FOR CONSTRUCTION OF MAIL CARRIERS—NEW DRY DOCKS PROPOSED FOR NEW YORK AND NORFOLK—OTHER NAVAL MATTERS.

Washington, D. C., Feb. 28—During the past few days the naval board of inspection and survey has been giving considerable attention to the subject of future auxiliary cruisers and has made several important recommendations looking to the amendment of existing requirements under which merchant steamships may be included in the list of vessels entitled to the benefit of subsidy for carrying the mail with a view to their conversion to auxiliary cruisers in time of war. It will be remembered that during the Spanish war considerable labor was entailed in converting the subsidized mail steamers into auxiliary cruisers. In order to obviate this difficulty, should the occasion ever again arise, the board recommends that all vessels built in future to obtain the subsidy should be constructed to conform to certain rigid requirements. The issue is pertinent at present, owing to the fact that certain merchant ships are under construction at the Cramp ship yard in Philadelphia which would be employed in the naval service in case of an emergency. The board recommends that all fire mains and steering engines be placed below the water line, in order to afford better protection from body shots. Ballast and trimming tanks are also required to compensate for the omission of cargo and the consumption of coal. The board suggests also that double bottoms be required and that certain arrangements of decks be made to facilitate the installation of the batteries.

The committee on naval affairs, which is steadily at work upon the naval appropriation bill, has practically decided to place in the bill a provision for the two new dry docks to cost $1,250,000 each—one at New York and the other at Norfolk, Va. The estimates of the navy department for the coming year aggregated $75,000,000. It is not thought this figure will be cut down much. The naval appropriation bill will doubtless carry $65,000,000.

The board of naval construction has received estimates of the board of survey on the Boston. The board estimates that the necessary repairs on the ship will cost about $400,000 and will occupy about two years. When they are completed, however, the Boston will be a thoroughly modernized warship. The work will be done at the Mare Island navy yard.

Bids were opened at the navy department on Saturday last for the erection of a ship fitter's shop at the Norfolk navy yard and for the construction of a pier at the Boston navy yard. The lowest bidders were the Penn Bridge Co. of Beaver Falls at $94,616 and William K. Lawler of Boston, at $24,800, respectively.

TWO FAST TORPEDO BOATS.

The United States torpedo boat No. 10, T. A. M. Craven, built by the Bath Iron Works of Bath, Me., has been preliminarily accepted by the navy department, having made her guaranteed contract speed of 30 knots per hour. The Craven left the works of her builders Wednesday morning, Feb. 21, the intention being to steam to the Portsmouth navy yard to be hauled out, cleaned, painted and fitted with new screws. The Craven has only had one or two preliminary builders' trials and during the last two months she has remained idle among the ice in the Kennebec river, waiting for favorable weather for a speed trial.

On Wednesday the official trial board were invited to make a trip on the Craven, the intention being to speed the vessel for one hour, provided the sea and weather was favorable. The results are truly remarkable. With defective screws and a foul bottom the little vessel plowed through the waters of the Atlantic at a speed of over 30 knots an hour. The revolutions per minute were over 322, against 318 on the Dahlgren, the difference being due to a slight fault in the pitch and blade area of the Craven's screws. The Dahlgren and Craven are supposed to have identical screws, but the Dahlgren was fitted with the best pair. If the Craven had been fitted with the Dahlgren's screws, a speed of 30.4 knots an hour would have been realized. The trial was perfectly satisfactory to the trial board, and the Bath Iron Works has delivered the vessel at the navy yard. The builders had hoped to make a world's speed record with this vessel, but glory can only be obtained in such channels by a great expenditure of dollars. The Dahlgren and Craven have attained their designed speed and been accepted by the navy department, and although their builders have not broken the world's record as regards speed, they have nevertheless produced the two fastest torpedo boats of the American navy and two of the fastest torpedo craft afloat. Moreover, they have built racing machines that have gone through many severe trial trips without an accident and without a defect coming to light. The first set of screws placed on the vessels have given them their designed speed; and the Craven, with defective screws, cavitation becoming very noticeable at 28½ knots, and a foul bottom—the vessel not having been docked since her launch—has attained her designed speed, a speed that only one other firm in this country beside the Bath Iron Works has as yet attained. It is undoubtedly a fact that the Bath company, if they cared to go to the expense and tune up the Craven to her maximum racing pitch, could make that vessel a 31 to 32-knot vessel, for as yet she has not been pushed as other builders of torpedo craft plan on doing. The Craven steamed 30 knots easily and on her official trial little smoke was to be seen and no flame was visible at any time. The little vessel was absolutely steady and no vibrations were perceptible. Mr. John S. Hyde, vice-president of the Bath Iron Works, has had charge of the trials of these remarkable little vessels.

Mileage tickets of the Central Passenger Association are good on the Nickel Plate road between Buffalo, Chicago or intermediate stations. 32 Mar. 16.

COMPETITOR FOR THE BIG KAISER WILHELM.

The Deutschland, launched recently at the Vulcan yards in Stettin, is intended to be a record breaker. The Hamburg-American Line, on whose account the steamer is being built at a cost of 14,000,000 marks ($3,332,000), expects to have her in service between New York and Hamburg the coming summer, as a competitor to the Kaiser Wilhelm der Grosse of the North German Lloyd Line. The following description will give an idea of the stupendous proportions of the new steamship: Length over all, 684 feet; beam, 67 feet; molded depth, 44 feet; displacement, loaded, 23,200 tons; measurement, 16,200 tons registered; horse power, 33,000; weight at time of launching, 9,300 tons.

The Deutschland is built according to the German Lloyd requirements for highest register of the four-deck-ship class, with her steering gear and rudder protected and under water line in compliance with instructions from the Imperial navy department, at whose disposal the ship would be in the event of war as a cruiser. Steam is supplied from twelve double and four single boilers, with 112 fires, which drive two six-cylinder quadruple expansion engines of 33,000 horse power. The two propeller shafts are each 40 meters (131.23 feet) long and 630 millimeters (24.8 inches) in diameter; each of the bronze propellers being 7 meters (22.96 feet) in diameter.

The ship has a double bottom extending its entire leugth, which is divided into twenty-four compartments. Fifteen exceptionally strong bulkheads extending from keel to main deck and one longitudinal bulkhead in the engine room divide the steamer into seventeen water-tight compartments. It is claimed that if two adjoining compartments were to fill with water the ship would not sink. The Deutschland is supposed to have accommodations for 1,057 passengers and a crew of 525. There are 263 first-class cabins, 99 second-class cabins, and accommodations for 290 steerage passengers. The first-cabin dining saloon is located amidship on main deck and has a seating capacity of 362. In the following table the Deutschland is compared with other very large vessels:

Name of ship.	Date.	Length over all.	Beam.	Depth.	Draught.	Displacement.	Speed.
		Feet	Feet.	Feet.	Feet.	Tons.	Knots.
Great Eastern	1858	692	*83	57½	25½	27,000	14.5
Paris	1888	560	63	42	26½	15.000	20.5
Campania	1893	625	65	41½	28	19,600	21.8
Kaiser Wilhelm der Grosse	1897	649	66	43	29	20,000	22 6
Oceanic	1899	704	68	49	32½	28,500	20
Deutschland	1900	684	67	44	†30	23,200	†23

*Over paddle box. †Estimated.

FRENCH AND RUSSIAN NAVAL ESTIMATES.

Washington, D. C., Feb. 28.—The French naval estimates, just issued, show some interesting changes. The total amount appropriated is $60,000,000, which is $2,000,000 more than in the previous year. The greater part of this increase is due to guns. For construction purposes $20,000,000 is asked and this is $230,000 more than for the current year. It has not yet been decided, according to the latest advices received in Washington, what new vessels will be ordered, but there is a fairly large program to advance, although it is made up mostly of small craft. Two authorized cruisers of 4,000 tons each and to have twenty-six to twenty-seven knots speed have not yet been ordered. The design with this high speed is not easy of solution. The ships recently laid down include two battleships, one at private works and the other, the Marseillaise, at Brest; two submarine torpedo boats at the government dock yards and four by contract; four squadron torpedo boats by contract; eleven torpedo boats, four torpedo boat destroyers and two river gunboats building in England.

The Russian naval estimates for this year amount to a total of $48,000,000, as compared with the $46,000,000 last year, but the significance of the increase is more marked when it is noted that at the beginning of this decade $22,000,000 was considered a large expenditure on the Russian navy, irrespective of special naval schemes which are now the fashion in Russia as with other nations. The amount that Russia will expend this year on new construction is $16,000,000. An interesting feature of the estimate is the sum required for strategic harbors. In the current year $2,000,000 was voted for Pope Alexander III and for Vladivostok. Next year there will be expended at the former $1,000,000 and at the latter $1,600,000 and at the new far eastern Russian port of Port Arthur, which appears in the estimates for the first time, a similar amount. Thus for the three harbors over $5,000,000 is to be expended as compared with the $2,000,000 for the present year.

A TUG OF COMPLETE EQUIPMENT.

The tug Eli B. Conine, recently completed by the Jackson & Sharp Co., Wilmington, Del., was given a trial in New York harbor a few days ago. This tug, which is of wooden construction, is 95 feet in length, 22½ feet beam and 10½ feet deep. The engine, which was supplied by Fred A. Verdon & Co. of Hoboken, N. J., is of the double steeple compound type with cylinders of 11 and 27 inches diameter and 24 inches stroke. Steam is supplied by a Dickson boiler, built by the Burlee Dry Dock Co. of Port Richmond, Staten Island, N. Y. The boiler is 8½ by 16 feet, with a working pressure of 175 pounds. During the trial the engine made 125 revolutions a minute and a speed of 12 knots was attained. The equipment of the vessel is thoroughly modern in every respect. She is fitted with a complete electric lighting plant, a Cooper patent steam steerer, manufactured by Brown & Miller of Jersey City, N. J., Blake pumps, and a life boat, life raft and life preservers manufactured by David Kahnweiler's Sons, New York city.

It is said that a ship yard is likely to be established at New York City as an adjunct of the $17,000,000 steel and iron consolidation which is to be formed with the Troy Steel Co. of Troy, N. Y., as the leading member. Although the details of the general organization have been fully perfected, the ship yard project is still somewhat in embryo, and indeed it has not been decided whether a separate company will be formed to operate this branch of the enterprise or whether it will be operated by the consolidated companies.

NEW VESSELS FOR LIGHT-HOUSE SERVICE.

Washington, D. C., Feb. 28—Plans are now being drawn and specifications prepared in the office of the engineer of the light-house board for the construction of a twin-screw steamer for the ninth light-house district on the great lakes. Bids will be solicited for the construction of the vessel within three weeks.

Bids will be opened on Thursday, March 1, by the light-house board for the construction of a new light-ship for the Cape Elizabeth station, Maine. Owing to the fact that the appropriation bill carried only $75,000 for this ship, the specifications call for a wooden vessel. The vessel, which is designated as light-ship No. 74, will be 118 feet between perpendiculars and 128 feet over all; 28 feet 6 inches beam on frames, and 14.7 feet depth of hold. The sides, stern posts and keelsons will be of oak and the planking of yellow pine, copper fastened. The ship will be sheathed with copper to 2 feet above the water line. There will be accommodations for four officers and ten men, with galley, kitchen, pantries and storerooms. The men's quarters will be on the main deck, so that they can have direct lights and can regulate ventilation at will.

The vessel will carry 120 tons of coal in bunkers and 9,000 gallons of fresh water. She will be equipped with two life boats constructed to withstand the roughest sea. She will have a steam windlass working two 2-inch chains and will be moored by a 5,000-pound mushroom anchor. In addition she will carry harbor anchors. An automatic device is attached to the steam windlass so as to give out the chain and take in the slack, thereby automatically regulating the stress on the ship.

The vessel will be equipped with a compound engine, 15 and 30 by 22 inches, driving one propeller 7 feet 9 inches in diameter. She will have two boilers of the gunboat type, constructed for a pressure of 110 pounds. The boilers will be 9 feet in diameter and 16 feet 4½ inches in length. On two steel masts will be carried a system of oil lamps which can be seen for 14 miles. The fog signal will be operated by steam, though it is the intention to fit an oil engine so as to make it possible to blow the fog signal with compressed air. The advantage of the compressed air process is that it is cheaper. The vessel will be heated throughout with steam. She will be equipped with hoisting engines and steam capstans. Her furnishings throughout will be very complete, and everything that will conduce to the comfort of the crew will be supplied. Everything about her will be of American manufacture. Walfrid Sylven, engineer for the light-house board, is the designer.

INITIAL TRIP OF THE AUGUSTA.

A number of prominent vessel men and dealers in ship building supplies were guests on board the Chesapeake Steamship Co.'s handsome new steamer Augusta on the occasion of the vessel's initial trip from Baltimore to Newport News last week. The Augusta was built by the Neafie & Levy Ship & Engine Building Co. at a cost of $350,000. She is 260 feet in length over all, 46 feet beam, 17 feet depth of hold. The hull is constructed of steel and more than meets all the requirements of the rules of the American Bureau of Shipping. The vessel is propelled by an inverted, vertical, triple expansion engine with cylinders of 27, 40 and 68 inches diameter and 42 inches stroke of piston. Running at 110 revolutions per minute the engines are expected to indicate 3,400 horse power and drive the vessel at a speed of 20 miles an hour. The shaft is of mild steel and the propeller of the sectional type, the hub being cast steel and the blades of manganese bronze. The high pressure cylinder has a valve of the piston type, the intermediate and low pressure have double-ported slide valves; the pressure is relieved from the back of the intermediate valve by the Allan-Richardson device; all valves are operated by the Stevenson link motion. The circulation pump is of the centrifugal type, operated by an independent vertical engine. The feed pump is of the latest improved Blake compound type and is the first pump of this design to be used on a merchant vessel. A large fire and bilge pump of the duplex type is also fitted. The sanitary arrangements are very complete, the apparatus including automatic flushing tanks. The battery of steam generators consists of four main and one auxiliary boilers. The main boilers are each 13 feet 9 inches in diameter by twelve feet in length and fitted with three corrugated furnaces 47 inches in diameter. The boilers work at a pressure of 165 pounds. The steamer is conspicuous by her two high funnels, each being 7 feet in diameter, their tops reaching 84 feet from the grate bars. The steamer is lighted throughout by electricity, the current being generated by two 15 K. W. General Electric Co. marine plants, which supply 450 incandescent lamps and a search light. The running lights are also electric. The vessel is fitted with steam steering gear, steam windlass, capstans and cargo hoisting engines.

Miller, Bull & Knowlton of 32 Broadway, New York city, for whom the steamers Ponce and San Juan were recently built by the Harlan & Hollingsworth Co. of Wilmington, Del., and the steamer Mae and Porto Rico by the Craig Ship Building Co. of Toledo, O., have disposed of the controlling interest which they held in the New York & Porto Rico Steamship Co., the corporation which operated these and other vessels between New York and Porto Rico and in the coasting trade of the island. The name of the purchaser has not been made public, but it is understood to be J. M. Ceballos & Co. of New York city, who control the Compania Transatlantica Espanola, which formerly operated vessels between New York, Havana and Spain. It is said that the vessels just purchased will in future stop at Havana and possibly some other Cuban ports, both going and returning. Miller, Bull & Knowlton will continue to act as agents of the line.

The United States light-house board has directed a letter to congress setting forth the fact that the appropriation of $80,000 made in the sundry civil bill of last March for a light-ship for the Pollock Rip shoals of Massachusetts is not sufficient, as since the estimate for building this light-ship was made the cost of labor and material which enter into her construction has largely increased. A contract was made to build the vessel but the government has not enough money to pay for her. The light-house board therefore asks for $5,000 additional.

SHIP BUILDING AT SCRANTON, MISS.

New Orleans, La., Feb. 28.—With the assistance of a reliable correspondent at Pascagoula, Miss., we are enabled to furnish the Review with some information relative to ship building operations. Christ Christianson, Scranton, Miss., has under construction at present one steam tug for the Rittenhouse-Moore Co. of Mobile, Ala.; length over all, 108 feet, beam 22 feet, depth of hold 9 feet 6 inches; frame of juniper, stem and stern post of live oak; planked with 3-inch long leaf yellow pine; decks to be 3 x 4 inches; to have a Scotch marine boiler, 10 x 14 feet; compound engines, 18 and 36 x 25. When finished this tug will have all the latest improvements and will have electric search light and be lit throughout by electricity. The same contractor has also under construction for Capt. Lee Kimball of Mobile one steamer; length 92 feet, beam 14 feet 6 inches, depth of hold 8 feet 6 inches. The same contractor also has a barge under construction; length 70 feet, beam 20 feet, depth of hold 5 feet. A steamer just completed at this yard is for Greenwood & Co. of Mobile, Ala.; length 68 feet, beam 14 feet 6 inches, depth of hold 6 feet 6 inches.

Geo. Frentz, Scranton, Miss., has on his marine ways at present the wreck of the British schooner Anita, which is being almost entirely rebuilt and will be put under the American flag. She was sold as a wreck in Mobile for $135 and brought here to be repaired. Her repairs will cost in the neighborhood of $2,000. Her present owner is A. C. Puddington of New York and she will be named the Alma F. Henry. Mr. Frentz recently took an order for a light draught three-masted schooner for the Dantzler Lumber Co. of Moss Point, Miss.; length 120 feet, beam 20 feet, depth of hold 9 feet.

Francis Codina, Scranton, Miss., has lately completed the steamer Native No. 2; length 70 feet, beam 17 feet, depth of hold 7 feet; compound engines, 12 and 22 x 12; a very complete and fast steamer.

In addition to the above, there is the Angelo marine ways of Moss Point, Miss., where vessels up to a tonnage of about 250 can be taken out for repairs, and the reputation of these works is generally satisfactory.

HOW CAN WE BESTORE OUR MERCHANT MARINE?

Our builders are not at fault; our sailors are not at fault. From the superb St. Paul and St. Louis to the clipper barkentines in the coffee trade modern American ships are as swift and efficient as they were in the old days of our maritime glory. They cost, as they always have cost, more to build and more to man, just as an American machine shop or woolen mill is apt to cost more to operate. But we have determined that in spite of this it is worth while to have American machine shops and woolen mills and that in the long run it is profitable. There are cheerful signs of a similar determination that it is worth while to have American ships. One powerful reason why we now have no more of them is that since the close of the civil war two sets of doctrinaires have been quarreling as to the kind of treatment that should be adopted to resuscitate the merchant marine. Neither party has been able to enforce its policy; they have been just strong enough to fight each other to a standstill. The result is that between the squabbling of these doctrinaires nothing whatever has been accomplished. One school clamors for "free ships;" the other for subsidies. These two ideas have come to be regarded as essentially antagonistic, as irreconcilable alternatives. Just here the doctrinaires have wrought their sharpest mischief. There is no valid reason why either policy should be applied with iron-like rigidity to the complete exclusion of the other. It is very much more reasonable to recognize what is sound and practical in either plan and to reject what is unnecessary and extravagant. The "free-ship" theory in its entirety might perhaps have been adopted with profit in the years before the civil war, when Britain had cheap iron and many iron ship yards and we had almost none. But it must be acknowledged that conditions are now radically altered; that it is now America which has the cheap steel in abundance, and, moreover, several of the largest and most successful steel ship yards in the world.—Winthrop L. Marvin, in the Review of Reviews.

LESSONS OF THE WAR WITH SPAIN—OTHER BOOKS.

The new volume by Capt. Mahan which bears the above title is certain to prove of interest and value. Capt. Mahan's position as a member of the American board of strategy gave him exceptional opportunity for analyzing the events of the war with Spain. Starting out with the original design of eliciting some of the lessons of this war, he has added to the work the further purpose of presenting, simply and clearly, the fundamental conceptions of warfare in general and naval warfare in particular. The volume supplements in a way Capt. Mahan's previous book "The Interest of America in Sea Power." The author has also devoted chapters to the peace conference and the moral aspect of war, the relations of the United States to their new dependencies, the distinguishing qualities of ships of war and current fallacies upon naval subjects. The work is published in cloth binding by Little, Brown & Co. of Boston at $2.

James Lowe Pilling, signing "master mariner," and who is connected with the Q. & C. Co. of Chicago, manufacturers of pneumatic tools, has just put out a very handsome little volume entitled "The Keel of the Kearsarge." It is a work of the first quality, from a literary as well as a typographical standpoint. It is dedicated "to the white caps that dot the blue, with gratitude to Rear Admiral Hichborn, U. S. N." and is filled with verses relative to the old and new Kearsarge and a host of other subjects. The volume is published by Robinson & Smith of 346 Dearborn street, Chicago.

The Wolverine Gas Engine Co. of Grand Rapids, Mich., is at work on a 48-foot vessel for J. Duarte of Merida, Yucatan. A gasoline engine will provide motive power and will be supplied from a copper tank with a capacity of 150 gallons of gasoline. A cabin in the vessel will be 6 feet in length and equipped with folding seats which may be converted at night into two double berths. The planking of the hull is of Louisiana cypress and the hull up to the water line is copper sheathed. The engine will be capable of developing 18 horse power and in addition the boat will carry 860 square feet of canvas.

FUTURE OF CUBA.

IMMENSE INDUSTRIAL AND COMMERCIAL DEVELOPMENT EXPECTED WITHIN THE NEXT DECADE IF AFFAIRS OF THE ISLAND ARE WORKED OUT FROM A PRACTICAL RATHER THAN A POLITICAL STANDPOINT.

WASHINGTON OFFICE OF THE MARINE REVIEW, 1345 PENNSYLVANIA AVE.
WASHINGTON, D. C., February 28, 1900.

Vessel men of the great lakes will remember Wm. Ludlow, who as a colonel in the army engineer corps had to do with river and harbor work in Michigan and with the lighting of the St. Mary's river, but who as brigadier general U. S. V., has been military governor of Havana for some time past. Not long ago I inquired of General Ludlow regarding the industrial and commercial development of the island. Although he has refused many requests to write for the magazines on this score, he talked very freely to me, partly no doubt because of the acquaintance I made with him while on the lakes. He did not understand that he was being interviewed, but there will probably be no harm in drawing some conclusions from what he said about the island.

"There are many delightful features about Cuba," he said. "It is one of the loveliest pieces of land that lie out of doors, and surely the most fertile and productive, with possibilities, agricultural and other, beyond anything, I think, that I know of anywhere. It has a little more than the area of the state of Pennsylvania, with a population a little more than that of Philadelphia, and is able to support a population of ten or twelve millions as easily as Cleveland bosses the lakes or a native of Ohio secures public office. If you will carefully examine the map of this most interesting region you will find that it is situated barely within the tropic zone, with a tremendous development of coast line and the most delightful climate imaginable, frost and excessive heat being equally unknown. Cuba is the garden of the gods as well as the key of the gulf, and in a general way a thing to be desired of all men, as Solomon would say. It is needless to enlarge upon the water privileges. There is such a field for the export and import of products as no equal territory can claim, so that I am as optimistic as possible about the future of Cuba and feel thoroughly assured of the immense agricultural, industrial and commercial developments that must occur within the next decade."

This opinion from Gen. Ludlow was, I suppose, based upon the assumption that Uncle Sam will stand up to his obligations and observe his pledge to establish and maintain an orderly, stable and responsible government in the island. Of the population he said there was about a million and a half of people, 40 or 50 per cent. of whom are negroes or very close derivatives. About 75 or 80 per cent. of the entire population cannot read and write; and furthermore it is quite generally understood, not only from what General Ludlow said, but also from other opinions, that the educated and intelligent classes have no experience in the conduct of public affairs, and lack two qualifications for successful management of their own affairs, namely, their lack of continuity of purpose, owing to the facility with which they permit themselves to fly the track, even in matters of moment, and the indisposition of the minority to accept cheerfully the decision of a majority. The one defect halts them for some reason short of the accomplishment of their object, and the second induces a constant tendency toward disintegration rather than the consolidation of forces essential to the maintenance of a political party. These particulars do not give an encouraging outlook for any immediate opportunity to vest in the inhabitants themselves the uncontrolled destinies of the island in which other nations are vitally interested by reason of the immense investments that have been made by Americans, Englishmen, Germans and French, to say nothing of the Spanish interests, aggregating an amount much larger than any of the others. It is likely, then, that the course of affairs, political and economic, must for some time to come be at least guided by carefully selected American agents, and if this be done and there is no undue impatience in regulating matters on the island, but rather a disposition to permit them to be quietly and judiciously worked out as a practical problem instead of a political theory, there will be no limit to the future prosperity of the place and its enormous value, both to the inhabitants and to the rest of the world. Of necessity, from its geographical position, the shipping interests will be immense. As for the exchange of commodities and other traffic, the water routes have no rival and absolutely command the situation.

As General Ludlow said, time will be required, not only to permit of the introduction and application of millions of capital in all the various enterprises which the Spanish omitted to exploit in Cuba, but also to give opportunity for this branch of the Spanish-American family to accustom itself gradually to contact and competition with the world at large, and by degrees to increase its working population (which is today hopelessly insufficient) by absorbing accessions of laborers from Spain or elsewhere, who shall be moved to seek their livelihood there.

AROUND THE GREAT LAKES.

A. A. Parker & Bro. is the name of the firm succeeding Parker & Millan as vessel and insurance agents at Detroit.

The Tonawanda Iron & Steel Co., Tonawanda, N. Y., has purchased the Lehigh Valley steamers Oceanica and Clyde, bringing the number of vessels in their fleet up to fourteen.

Representatives of all the leading passenger lines met in Detroit Wednesday and agreed that rates for the coming season should be advanced all around on account of higher costs in labor, fuel, etc.

F. A. Smythe has resigned as president of the Lorain Foundry Co., Lorain, O., to devote all his time to the business of the Thew Automatic Shovel Co., which was located at Lorain last year, largely through Mr. Smythe's efforts.

The car ferry steamer Muskegon of the Flint & Pere Marquette lines had a rough experience in a gale on Lake Michigan a few days since. When the vessel finally reached Milwaukee her cargo of twenty-six freight cars were battered and splintered and their wheels jammed through the deck. The sides of the steamer were bent out of shape by the giving way of the stanchions which supported the upper deck and her steering gear was demolished. A wrecking crew was required to remove the cars from the ferry and the vessel herself will require extensive repairs.

It is announced from Chicago that upon the opening of navigation next spring the Barry Bros. will extend their business northward and will have a line of boats touching at all the principal points on Lake Michigan and Green bay. They have just secured a lease of the Lake Superior dock in Sheboygan, which is at the foot of Eighth street, near the Goodrich dock, and have about completed arrangements for a dock at Manitowoc.

The several furnaces operating ore docks at Lake Erie ports have notified the furnace companies and steel works that the rebate of 3 cents on ore shipped from the dock will be discontinued, and the new regulation is made to be effective as of Jan. 1. The dock companies state that after going through the month of January on the new wage schedule for loading ore from docks, the expense was found to be so greatly increased that the rebate could not longer be allowed without loss.

After holding out against the Pittsburg Coal Co. ($64,000,000 consolidation) for several months, Martin Mullen of the Cuddy-Mullen Coal Co., Cleveland, has finally sold out his interests in mines and in the lake coal trade to the consolidation. Mr. Loftus Cuddy sold his half interest in the Cuddy-Mullen company to the consolidation when it was being formed, but Mr. Mullen demanded a higher price than his partner. The amount he received has not been made public, but it is said to have been sufficient to pay him well for the chance he took in opposing the big corporation.

The Buffalo Dry Dock Co. is doing a large amount of work. The Western liner Montana is out of the dock, following the Vanderbilt of the same line, both of them having received large repairs. The steamer C. F. Curtis has also been given steel arches, keelsons and planking. The steamer D. C. Whitney has received a rebuild to the extent of about $6,000 and the Majestic is having her upper deck raised up flush with her rail, so that she can stand heavier seas when loaded deep. This plan has been followed in the rebuilding of quite a large number of wooden vessels of late.

A dispatch from Philadelphia announces that official notice has been sent to the stock holders by President Frank J. Firth of the Erie & Western Transportation Co., which operates a line of steamers between Buffalo, Erie, Chicago and Duluth, known as the Anchor line, that the Pennsylvania Railroad Co. is ready to purchase all or 90 per cent of the capital stock of the Erie & Western Transportation Co. at par. The stock is to be paid for in shares of the Pennsylvania Railroad Co. at 65 a share, the railroad stock carrying with it the current six months' dividend. A majority of the Erie & Western Transportation Co.'s stock is held by persons affiliated with the Pennsylvania railroad.

Few men connected with the management of lake vessels are better known or more highly regarded than Edward Morton, commodore of the Wilson fleet of Cleveland, who is always unassuming but so thoroughly acquainted with everything pertaining to ships that he commands the respect of all the captains and others with whom he has dealings. General regret of a very sincere kind has therefore followed the announcement of the death of Mrs. Morton, which occurred at her home in Cleveland on Sunday last. She was an estimable woman of many loving traits of character and the mother of five children, most of whom had about reached an age that would have permitted of her life being made very happy if she had been spared to them for even a few more years.

C. C. Shayne, president of the Merchants' & Manufacturers' Board of Trade of New York, said in an address to the New Haven Business Men's Association a few days ago: "For years I was not in favor of the government subsidizing American ships. I considered any donation made by the government to any corporation for business purposes as a tax on the people from which they would derive no benefit. I have come to the conclusion, however, that I was mistaken, and I am more thoroughly convinced of it since the Spanish war. I regard the outlay made by the government in assisting the building of ships controlled by the American line, as one of the very best investments the government has ever made.

Among recent sales of vessel property are the following: Steamers Oceanica and Clyde, Lehigh Valley Transportation Co. of Buffalo to Tonawanda Iron & Steel Co. of Tonawanda, N. Y.; steamer Desmond, C. R. Jones estate of Cleveland, to Kelley Island Lime & Transport Co. of Cleveland; steamer A. G. Lindsay, C. R. Jones estate of Cleveland to Cleveland Box Co.; steamer Isabella J. Boyce, Jonathan Boyce of Bay City to Kelley Island Lime & Transport Co.; steamer Mark Hopkins, Henry McMorran of Port Huron to O. W. Blodgett of Bay City; schooner Angus Smith, Mitchell & Co. of Cleveland to John M. Thomas of the Duluth Furnace Co.; schooner Racine, Henry McMorran of Port Huron to John F. Wedow of Cleveland; steamer J. H. Shrigley, Mr. Skully of Dunkirk to the J. N. Hahn Co. of Cleveland. It is also reported that the J. N. Hahn Co. has purchased the schooner Shawnee to tow with the Shrigley.

A dispatch from Buffalo relative to next season's shipments of anthracite coal is as follows: "There is as yet no stir in water-coal matters, but the report, made within a month, that there is probably more than 400,000 tons of anthracite here for shipment by lake, is now followed by reports of much more than the usual amount of work in progress on the shipping trestles. Coxe Bros. are putting about $20,000 on their trestle. It will be raised up 4 feet for better delivery to vessels and it will be strengthened all through, to enable it to take and discharge cars with fifty-ton loads. The Reading trestle is receiving $12,000 or so in repairs, which include a practical rebuild of the top side, though it is not to be changed in form materially. If the new cut to the lake from Farmer's point on Buffalo river is made this season, as now seems likely, it is expected that the Lehigh Valley company will build a big steel storage plant on it near the lake, and it is stated that Coxe Bros. will also build something of the kind there as the firm does not own the trestle that now goes in its name. Altogether it looks as though the future of the lake trade in anthracite is safe, in spite of the predictions to the contrary sometimes made by railroad men and shippers who are seeking low rates. The old lead of the lakes in anything they can do is really as good as ever; that is, their ability to move in great bulk any commodity they can cover will never be disputed by the roads."

ANALYSES OF LAKE SUPERIOR IRON ORES.

MARQUETTE RANGE.

ORE.	IRON	SILICA	PHOS.	MANG.	ALUMINA	LIME	MAGNESIA	SULPHUR	LOSS BY IGNITION	MOIST.
Abbottsford*	64.22	4.42	.033	.18	1.60	.31	.17	.014	.....	
	62.6530	4.3121	.0321	.1756	1.6487	.3024	.1658	.0136	.....	2.44
Alford*	63.74	3.39	.052	.35	1.83	.31	.20	.020	.....	
	55.4856	2.9509	.0452	.3046	1.5930	.2698	.1741	.0174	.....	12.95
Angeline, Hard	66.71	2.19	.016	.11	1.47	.10	.05	.018	.66	
	63.3278	2.0789	.0151	.1044	1.3954	.0949	.0474	.0123	.6265	5.07
Angeline, Hematite	64.40	4.05	.045	.32	1.31	.15	.09	.012	2.01	
	57.7539	3.6320	.0403	.2869	1.1748	.1345	.0807	.0107	1.8025	10.32
Angeline, South	62.17	5.04	.099	.40	1.56	.18	.12	.025	3.40	
	54.6722	4.4321	.0870	.3517	1.3718	.1582	.1055	.0219	2.9899	12.06
Bell	39.985	38.27	.0332	.22	1.28	.13	.16	.028	2.29	
	38.853	37.18	.0322	.21	1.14	.12	.15	.027	2.22	2.83
Bedford*	59.05	8.84	.122	.52	1.49	.41	.31	.027	.....	
	51.9640	7.7792	.1073	.4576	1.3112	.3608	.2728	.0237	.....	12.00
Beresford*	63.61	4.88	.105	.39	2.57	.43	.43	.013	.....	
	62.8721	4.8233	.1037	.3854	2.5401	.4250	.4250	.0128	.....	1.16
Buffalo	60.973	.....	.1069	.....	.....	.....	.....	.....	.....	
	53.3013	.....	.0934	.....	.....	.....	.....	.....	.....	12.582
Cameo	58.826	.....	.1162	.....	.....	.....	.....	.....	.....	
	51.3627	.....	.1014	.....	.....	.....	.....	.....	.....	12.687
Cambria	60.20	6.49	.056	.31	2.03	.88	.37	.010	2.53	
	53.46	5.76	.050	.28	1.80	.78	.33	.0089	2.25	11.20
Cambridge	59.71	7.10	.610	.42	1.25	2.50	.52	.004	1.81	
	50.5803	6.0144	.5167	.3557	1.0588	2.1177	.4404	.0033	1.5332	15.29
Castleford*	58.64	10.43	.094	.36	2.87	.40	.40	.020	.....	
	58.1356	10.3403	.0931	.3569	2.8453	.3965	.3965	.0198	.....	.86
Champion No. 1*	64.00	4.55	.060	.20	2.38	.32	.29	.013	.....	
	63.44	4.51	.0594	.198	2.36	.317	.287	.0128	.....	.88
Chatford*	50.72	17.70	.105	.78	1.25	.31	.31	.027	.....	
	44.9683	15.6928	.0930	.6915	1.1082	.2748	.2748	.0239	.....	11.34
Cliffs Shaft	60.90	4.030	.109	.384	2.446	1.148	1.339	.025	2.710	
	60.00	3.970	.107	.378	2.410	1.131	1.319	.024	2.670	1.47
Comrade	56.51	11.11	.126	.073	3.817	.27	.70	.037	2.70	
	55.89	10.99	.124	.072	3.775	.26	.69	.036	2.67	1.09
Imperial	52.70	12.890	.281	.161	1.004	1.027	1.218	.018	7.470	
	47.95	11.730	.255	.146	.913	.934	1.108	.016	6.797	9.00
Jackson Pit 7	55.00	14.38	.076	.37	2.49	.14	.11	.022	3.73	
	51.05	13.35	.071	.34	2.31	.13	.10	.020	3.46	7.18
Jackson, So. Silica	43.50	.....	.055	3.50	.....	.....	.....	.....	.....	
	40.0417	.....	.0508	3.2475	.....	.....	.....	.....	.....	7.50
Lake	59.90	6.010	.100	.443	2.784	.408	.597	.017	3.570	
	51.61	5.178	.086	.381	2.398	.351	.514	.014	3.075	13.84
Lake Bessemer	63.67	5.460	.040	.295	1.447	.230	.226	.016	1.400	
	55.74	4.779	.035	.258	1.266	.201	.197	.014	1.225	12.46
Lillie	62.55	5.14	.077	.37	2.22	.28	.09	.011	2.40	
	55.61	4.57	.068	.33	1.97	.25	.080	.010	2.13	11.10
Marquette	42.793	35.37	.050	.25	.99	.21	.21	.021	1.67	
	40.251	33.26	.047	.23	.93	.19	.19	.019	1.57	5.94
Norfolk*	55.00	14.25	.055	.17	3.30	.57	.56	.032	.....	
	54.50	14.12	.0544	.168	3.27	.56	.55	.0317	.....	.91
Peninsular	52.00	.....	.080	.....	.....	.....	.....	.....	.....	
	47.8400	.....	.0736	.....	.....	.....	.....	.....	.....	8.00
Princeton No. 1	62.81	5.95	.063	.14	1.25	.80	.68	.004	1.69	
	53.6962	5.0866	.0538	.1196	1.0686	.6839	.5813	.0034	1.4447	14.51
Princeton No. 2	61.63	8.50	.109	.24	1.21	.70	.54	.005	2.60	
	53.1065	7.3244	.0939	.2068	1.0426	.6031	.4653	.0043	2.2404	13.83
Republic Special	67.82	1.30	.021	Trace	.63	.15	.08	.045	.60	
	67.5148	1.2941	.0209	Trace	.6271	.1493	.0796	.0447	.5973	.45
Republic Specular	66.77	2.70	.037	.09	.93	.17	.12	.01	.35	
	66.2558	2.6792	.0367	.0893	.9228	.1686	.1190	.0099	.3473	.77
Republic Kingston	63.84	6.40	.041	.16	1.08	.40	.33	.028	.19	
	63.1505	6.3308	.0405	.1582	1.0683	.3956	.3264	.0276	.1879	1.08
Republic Magnetic, (Non-Bess.)*	69.00	3.23	.12	.147	.664	.20	.216	.021	.46	
	68.6550	3.128	.1194	.1462	.6606	.1990	.2149	.0208	.4577	.50
Rose	61.05	6.33	.117	.257	2.379	.42	.061	.018	2.98	
	53.66	5.56	.103	.226	2.091	.37	.054	.016	2.62	12.10
Richmond	44.00	35.06	.041	.15	.52	.30	.15	.006	1.50	
	43.12	34.36	.040	.15	.51	.29	.15	.006	1.47	2.00
Salisbury	61.87	5.570	.092	.161	1.807	.262	.147	.014	2.910	
	52.65	4.740	.078	.137	1.537	.222	.125	.011	2.47	14.90
Salisbury Bessmer*	63.60	3.43	.044	.25	1.38	.13	.18	.017	4.45	
	54.11	2.91	.037	.21	1.17	.11	.15	.014	3.78	14.91
Scotch	59.00	.....	.....	.....	.....	.....	.....	.....	.....	
	58.41	.....	.....	.....	.....	.....	.....	.....	.....	1.00
Sheffield	60.45	10.69	.021	.11	1.57	.10	.09	.026	1.03	
	59.0354	10.4398	.0205	.1074	1.5332	.0976	.0878	.0253	1.0058	2.34
Tilden Silica	42.50	37.49	.029	.103	.908	.150	.142	.012	.800	
	41.28	36.41	.028	.100	.882	.145	.137	.011	.777	2.86

MESABA RANGE.

ORE.	IRON	SILICA	PHOS.	MANG.	ALUMINA	LIME	MAGNESIA	SULPHUR	LOSS BY IGNITION	MOIST.
Adams	63.80	3.00	.034	.41	1.17	.12	.05	.002	3.74	
	57.30	2.69	.031	.37	1.05	.11	.04	.0018	3.36	10.19
Admiral	64.20	5.04	.028	.31	.41	.35	.27	.004	2.06	
	59.20	4.65	.026	.29	.38	.32	.25	.004	1.90	7.70
Ainslie	62.47	3.47	.077	.71	2.57	.21	.15	.020	3.17	
	56.65	3.15	.070	.64	2.33	.19	.14	.018	2.87	9.31
Auburn	64.10	2.86	.049	.43	1.80	.53	.27	.010	2.44	
	50.9400	2.5405	.0435	.3820	1.5089	.4708	.2398	.0089	2.1675	11.17
Audrey	62.15	3.24	.058	.85	1.86	.62	.23	.007	4.00	
	54.2383	2.8275	.0506	.7418	1.6232	.5411	.2007	.0061	3.4908	12.73
Beaver	62.66	3.53	.0794	.34	1.92	.20	.13	.015	3.90	
	54.865	3.09	.0695	.29	1.68	.17	.10	.013	3.27	12.44
Biwabik	63.56	3.00	.038	.49	.95	.12	.07	.006	3.41	
	58.4307	2.7579	.0349	.4504	.8733	.1103	.0643	.0055	3.1348	8.07
Canton	60.95	3.16	.048	.44	.84	.64	.18	Trace.	7.10	
	53.6909	2.7836	.0422	.3876	.7400	.5638	.1586	Trace.	6.2544	11.91
Commodore	63.60	4.21	.038	.44	1.21	.34	.12	.007	3.39	
	56.73	3.76	.034	.39	1.08	.30	.11	.006	3.02	10.80
Commodore Non-Bess	62.70	4.21	.058	.44	1.29	.34	.12	.006	3.72	
	55.80	3.75	.052	.39	1.15	.30	.11	.005	3.31	11.00
Duluth	60.19	5.12	.048	.90	1.24	.15	.08	.011	6.90	
	52.30	4.45	.042	.78	1.07	.13	.07	.0096	6.00	13.11
Fayal	63.41	3.15	.035	.63	.81	.42	.19	None.	4.10	
	56.8597	2.8246	.0314	.5649	.7263	.3766	.1704	None.	3.6765	10.33
Franklin	62.78	4.85	.040	.49	1.03	.30	.46	.016	3.41	
	58.5046	4.5197	.0372	.4566	.9598	.2795	.4286	.0149	3 1777	8 81
Genoa	63.42	3.38	.030	.50	.86	.47	.16	Trace.	3.23	
	57.3444	3.0582	.0271	.4521	.7776	.4250	.1447	Trace.	2.9206	9.58
Hale*	60.00	5.00	.080	.55	.52	1.58	.....	.016	.....	
	54.00	4.50	.072	.495	.468	1.422	.....	.014	.....	10.00
Hartley	64.74	2.50	.038	.41	1.29	.18	.04	.007	3.10	
	57.77	2.23	.034	.37	1.15	.16	.035	.006	2.77	10.76
Hibbing	64.85	2.68	.033	.46	1.40	.14	.13	.009	2.31	
	57.92	2.39	.029	.41	1.25	.13	.12	.008	2.06	10.69
Juniata	58.971	.....	.0578	.401	.....	.....	.....	.....	.....	
	50.3022	.....	.0493	.3420	.....	.....	.....	.....	.....	14.700
Kanawha*	60.00	5.50	.067	.46	1.10	1.40	.25	.004	2.00	
	54.00	4.95	.060	.414	.99	1.26	.225	.004	1.80	10.00
Malta	62.60	4.07	.029	.46	.86	.64	.22	Trace.	2.78	
	57.5795	3.7436	.0267	.4231	.7910	.5887	.2024	Trace.	2.5570	8.02
Mountain	62.830	.....	.0474	.307	.....	.....	.....	.....	.....	
	53.9640	.....	.0407	.2636	.....	.....	.....	.....	.....	14.111
Oliver	61.893	.....	.0576	.348	.....	.....	.....	.....	.....	
	53.2991	.....	.0496	.2996	.....	.....	.....	.....	.....	13.885
Penobscot	61.435	6.44	.0335	.46	1.43	.20	.10	.013	3.39	
	53.878	5.64	.0293	.40	1.25	.17	.08	.011	2.97	12.30
Pillsbury	62.32	5.00	.028	.30	1.29	.11	.14	.005	3.80	
	56.67	4.55	.025	.27	1.17	.10	.13	.0045	3.46	9.06
Preble	59 400	.....	.0840	1.345	.....	.....	.....	.....	.....	
	51.7718	.....	.0732	1.1722	.....	.....	.....	.....	.....	12.842
Roberts	61.35	7.46	.028	.44	1.07	.46	.19	.008	1.97	
	55.78	6.77	.0254	.40	.973	.418	.173	.007	1.79	9.08
Saintry*	62.50	4.75	.069	.30	1.90	.19	.11	.01	.....	
	56.25	4.27	.062	.27	1.71	.17	.099	.009	.....	10.00
Sellers	63.95	3.82	.039	.46	1.29	.17	.13	.032	2.45	
	57.72	3.45	.035	.42	1.16	.15	.12	.029	2.21	9.74
Sparta	64.08	3.90	.030	.37	.84	.53	.15	.006	1.57	
	59.0561	3.5942	.0276	.3410	.7741	.4884	.1382	.0055	1.4469	7.84
Stevenson*	63 40	5.16	.040	.32	.62	.24	.18	.009	3.20	
	57.06	4.59	.036	.288	.558	.216	.162	.008	2.88	10.00
Top Brown	61.26	4.04	.065	1.30	1.29	.55	.15	.007	4.35	
	55.2443	3.6433	.0586	1.1723	1.1633	.4960	.1353	.0063	3.9228	9.82
Vulcan	62.55	4.27	.042	.94	.....	.....	.....	Trace.	.....	
	57.0018	3.8913	.0383	.8566	.....	.....	.....	Trace.	.....	8.87
West Drift	63.84	2.51	.052	.72	.....	.....	.....	Trace.	.....	
	57.7688	2.2713	.0471	.6515	.....	.....	.....	Trace.	.....	9.51

GOGEBIC RANGE.

ORE.	IRON	SILICA	PHOS.	MANG.	ALUMINA	LIME	MAGNESIA	SULPHUR	LOSS BY IGNITION	MOIST.
Ashland*	63.00	.....	.045	.....	.....	.....	.....	.....	.....	
	55.44	.....	.0396	.....	.....	.....	.....	.....	.....	12.00
Atlantic*	62.77	4.16	.043	1.04	1.11	.19	.105	.015	.....	
	55.2438	3.6612	.0378	.9153	.9769	.1672	.0924	.0132	.....	11.99
Aurora	61.81	5.48	.027	.43	1.11	.07	.10	.010	4.02	
	55.72	4.94	.024	.39	1.00	.063	.09	.009	3.62	9.86
Best	55.482	13.94	.056	1.00	1.62	.35	.26	.025	3.03	
	48.28	12.13	.0487	.87	1.40	.30	.22	.021	2.63	12.98
Bonnie	53.45	11.04	.0275	5.11	1.40	.14	1.10	.025	3.51	
	47.372	9.78	.0243	4.52	1.24	.12	.97	.022	3.11	11.37
Brotherton	63.03	7.04	.029	.405	.756	.400	.046	.009	1.150	
	56.27	6.292	.026	.362	.676	.358	.041	.008	1.03	10.73
Buckeye	58.29	10.50	.059	.43	1.97	.14	.46	.025	2.55	
	50.94	9.17	.052	.38	1.72	.12	.40	.022	2.23	12.61
Cary Empire	57.79	4.54	.057	3.97	.77	.18	.10	.005	5.75	
	52.2306	4.1033	.0515	3.5881	.6959	.1627	.0904	.0045	5.1969	9.62
Colby No. 1	57.66	3.61	.064	6.12	1.345	.34	.28	.009	6.94	
	51.89	3.25	.058	5.51	1.211	.31	.25	.0081	6.25	10.00
Colby No. 2	60.37	3.74	.092	2.80	1.28	.17	.23	.006	4.60	
	54.94	3.40	.084	2.55	1.16	.15	.21	.005	4.19	9.00
Cass*	53.65	8.14	.053	7.22	.86	.21	2.17	.019	3.13	
	47.335	7.41	.0467	6.67	.75	.18	1.91	.016	2.76	11.77
Day	62.370	.....	.0723	.....	.....	.....	.....	.....	.....	
	55.8061	.....	.0646	.....	.....	.....	.....	.....	.....	10.524
Fairfax	63.287	.....	.0736	.756	.....	.....	.....	.....	.....	
	54.6774	.....	.0635	.6531	.....	.....	.....	.....	.....	13.604
Globe	64.23	6.68	.117	.19	.....	.....	.....	.....	.....	
	56.5224	5.8784	.1029	.1672	.....	.....	.....	.....	.....	12.00
Iron Belt	60.66	8.35	.045	.35	1.60	.18	.13	.011	2.40	
	53.59	7.38	.040	.31	1.41	.16	.11	.010	2.12	11.66
Lawrence	61.83	5.90	.057	.57	1.38	.15	.13	.020	3.30	
	55.61	5.31	.051	.51	1.24	.13	.12	.018	2.97	10.06
Melrose	62.19	4.72	.0302	.91	.96	.16	.09	.018	3.86	
	55.025	4.17	.0267	.80	.84	.14	.07	.015	3.41	11.52
Mikado	56.35	15.05	.138	.35	1.10	.24	.17	.010	2.30	
	48.6582	12.9957	.1192	.3022	.9499	.2072	.1468	.0086	1.9861	13.65
Montreal	65.42	3.14	.041	.84	.71	.13	.12	.017	3.34	
	60.09	2.88	.038	.77	.65	.12	.11	.016	3.07	8.14
Newport	53.702	5.63	.0392	7.66	1.12	.17	.14	.009	5.06	
	48.267	5.06	.0352	6.88	1.00	.15	.12	.008	4.54	10.12
New Era	57.105	11.40	.0285	1.41	1.24	.19	.10	.011	3.43	
	50.44	10.06	.0251	1.24	1.09	.16	.08	.009	3.02	11.67
Norrie	62.957	.....	.0420	.....	.....	.....	.....	.....	.....	
	56.4736	.....	.0376	.....	.....	.....	.....	.....	.....	10.298
North Vein	62.58	5.50	.048	.41	1.20	.09	.08	.004	.....	
	56.26	4.94	.043	.37	1.08	.08	.07	.004	.....	10.10
Palms	61.856	5.28	.0556	.90	1.31	.17	.12	.012	3.26	
	52.633	4.49	.047	.76	1.11	.14	.10	.010	2.77	14.91
Rand	62.340	.....	.0480	3.610	.....	.....	.....	.....	.....	
	54.7968	.....	.0404	3.1731	.....	.....	.....	.....	.....	12.100
Sunday Lake*	63.00	7.00	.030	.32	1.34	.16	.06	.006	.59	
	56.07	6.23	.0267	.285	1.193	.143	.054	.005	.53	11.00
Taylor*	62.00	.....	.065	.....	.....	.....	.....	.....	.....	
	54.56	.....	.0572	.....	.....	.....	.....	.....	.....	12.00
Tilden	62.737	.....	.0476	.784	.....	.....	.....	.....	.....	
	54.2386	.....	.0411	.6777	.....	.....	.....	.....	.....	13.546
Tilden No. 8	62.358	.....	.0400	1.678	.....	.....	.....	.....	.....	
	54.1398	.....	.0347	1.4568	.....	.....	.....	.....	.....	13.179

MENOMINEE RANGE.

ORE.	IRON	SILICA	PHOS.	MANG.	ALUMINA	LIME	MAGNESIA	SULPHUR	LOSS BY IGNITION	MOIST.
Amasa	55.64	6.84	.218	.29	2.95	2.05	1.92	.015	5.30	
	53.6982	6.6013	.2104	.2799	2.8470	1.9785	1.8530	.0145	5.1150	3.49
Ajax	52.17	11.14	.0607	.86	2.22	1.56	4.70	.022	3.94	
	48.612	10.38	.0565	.80	2.06	1.45	4.37	.020	3.67	6.82
Badger	59.91	4.47	.120	.22	2.52	1.20	1.97	.100	.....	
	54.39	4.06	.110	.20	2.29	1.09	1.79	.091	.....	9.22
Barton	59.828	.....	.530	.....	.....	.....	.....	.....	.....	
	56.4752	.....	.5002	.....	.....	.....	.....	.....	.....	5.604
Bristol	50.00	6.10	.738	2.69	3.34	3.77	1.97	.033	7.95	
	46.09	5.62	.680	2.48	3.08	3.48	1.82	.030	7.33	7.82
Cedar	52.00	10.26	.190	.30	3.95	1.75	4.87	.130	3.68	
	47.59	9.39	.174	.27	3.61	1.60	4.46	.119	3.37	8.49
Chapin*	58.13	6.20	.065	.54	1.41	1.235	3.565	.019	3.22	
	54.05	5.76	.060	.485	1.31	1.145	3.31	.017	3.00	6.96
Clifford	41.01	39.10	.014	.09	.97	.49	.29	.003	.45	
	39 96	38.10	.0136	.087	.945	.48	.28	.0029	.44	2.55
Columbia No. 1	60.00	5.10	.52	.23	1.99	.61	.90	.050	4.15	
	53.28	4.52	.461	.20	1.76	.54	.79	.044	3.68	11.20
Columbia No. 2	54.48	12.15	.46	.21	1.95	1.20	.65	.049	2.56	
	48.378	10.78	.408	.18	1.73	1.09	.57	.043	2.27	11.20
Crystal Falls	58.40	4.09	.71	.31	1.40	2.62	2.02	.007	3.51	
	53.84	3.77	.655	.29	1.29	2.42	1.86	.006	3.24	7.80
Davidson	56.03	7.64	.180	.24	3.43	1.27	2.89	.080	5.00	
	50.78	6.92	.163	.22	3.11	1.15	2.62	.073	4.53	9.37
Florence	56.02	4.85	.325	.38	2.86	1.70	2.50	.125	5.44	
	51.459	4.45	.298	.34	2.62	1.56	2.29	.114	4.99	8.14
Granada	61.52	4.60	.061	.23	1.53	.36	1.63	.015	2.30	
	56.64	4.23	.056	.21	1.41	.33	1.50	.014	2.12	7.93
Great Western*	60.40	5.80	.385	.61	1.21	2.24	1.65	.009	2.43	
	55.39	5.32	.353	.56	1.11	2.05	1.51	.008	2.23	8.30
Hemlock	58.72	5.70	.272	.20	2.66	1.92	1.55	.006	2.95	
	56.4064	5.4754	.2613	.1921	2.5552	1.8444	1.4889	.0058	2.8338	3.94
Keel Ridge	40.64	37.42	.046	.20	.90	1.35	1.00	.006	.....	
	39.46	36.33	.045	.19	.87	1.31	.97	.0058	.....	2.90
Lamont	58.10	4.31	.673	.35	1.25	1.92	2.34	.009	3.60	
	53.39	3.96	.618	.32	1.15	1.76	2.15	.008	3.31	8.10
Lincoln*	60.20	5.05	.290	.66	1.67	2.29	2.35	.010	2.95	
	55.88	4.65	.267	.61	1.54	2.11	2.16	.0092	2.71	8.00
Loretto	57.067	13.20	.0205	.20	2.12	.32	.57	.062	1.59	
	52.09	12.04	.0187	.18	1.93	.29	.52	.056	1.45	8.72
Manganate	50.00	4.45	.626	4.82	2.50	2.53	2.73	.021	7.98	
	47.70	4.24	.597	4.60	2.38	2.41	2.60	.020	7.61	4.61
Millie	63.705	2.97	.0275	.12	.94	1.14	1.49	.008	2.12	
	60.092	2.80	.0259	.11	.88	1.07	1.40	.007	1.99	5.67
Nimick	62.72	4.35	.071	.22	1.25	.65	2.24	.03	1.65	
	57.71	4.00	.065	.20	1.15	.60	2.06	.027	1.52	7.99
Pewabic	63.21	5.48	.009	.11	1.04	.86	1.12	.003	1.20	
	58.7853	5.0964	.0084	.1023	.9672	.7998	1.0416	.0028	1.1160	7.00
Pewabic Genoa	45.97	32.40	.009	.09	1.30	.79	1.08	.002	1.24	
	43.5566	30.6990	.0085	.0853	1.2318	.7485	1.0233	.0019	1.1749	5.25
Quinnesec*	49.61	27.80	.028	.27	.56	.82	.48	.010	2.40	
	48.53	27.19	.027	.26	.54	.80	.47	.010	2.35	2.18
Russell	54.10	10.00	.067	.32	2.15	3.02	2.65	.032	4.57	
	50.432	9.32	.0624	.29	2.00	2.81	2.47	.029	4.26	6.78
San Jose	64.405	4.64	.014	.30	1.24	.19	.39	.027	.64	
	59.072	4.25	.0128	.27	1.13	.17	.35	.024	.58	8.28
Sheridan	55.48	7.37	.224	.25	4.48	.75	.59	.610	5.35	
	49.5880	6.5873	.2002	.2234	4.0042	.6703	.5273	.5462	4.7818	10.62
Toledo	54.21	19.80	.010	.11	1.20	.88	1.08	.004	1.20	
	50.9574	18.6120	.0094	.1034	1.1280	.8272	1.0152	.0038	1.1280	6.00
Tyrone	60.40	6.59	.088	.16	1.38	1.25	2.15	.001	2.05	
	56.1720	6 1287	.0818	.1488	1.2834	1.1625	1.9995	.0009	1.9065	7.00
Walpole	58.75	10.51	.120	.13	1.30	.79	1.96	.002	1.22	
	55.8125	9.9845	.1140	.1235	1.2350	.7505	1.8620	.0019	1.1590	5.00

VERMILLION RANGE.

ORE.	IRON	SILICA	PHOS	MANG.	ALUMINA	LIME	MAGNESIA	SULPHUR	LOSS BY IGNITION	MOIST.
Chandler	64.43	4.20	.040	.22	2.20	.63	.14	.002	.90	
	60.9250	3.9715	.0378	.2080	2.0802	.5957	.1324	.0019	.8510	5.54
Jura	62.142	.....	.0760	.....	.....	.....	.....	.....	.....	
	57.5565	.....	.0703	.....	.....	.....	.....	.....	.....	7.379
Long Lake	60.47	7.67	.044	.13	3.65	.86	.28	.012	1.45	
	56.1948	7.1277	.0409	.1208	3.3919	.7992	.2602	.0112	1.3475	7.07
Pioneer	63.506	.....	.0422	.....	.....	.....	.....	.....	.....	
	58.4534	.....	.0388	.....	.....	.....	.....	.....	.....	7.956
Red Lake	63.72	4.08	.131	.09	2.01	1.02	.34	.022	.80	
	61.8976	3.9633	.1273	.0874	1.9525	.9908	.3303	.0214	.7771	2.86
Savoy	63.452	.....	.0479	.....	.....	.....	.....	.....	.....	
	58.9887	.....	.0445	.....	.....	.....	.....	.....	.....	7.034
Vermillion	66.22	2.55	.127	.06	1.04	.92	.30	.007	.45	
	65.2598	2.5130	.1252	.0591	1.0249	.9067	.2957	.0069	.4435	1.45
Vermillion, Special	66.43	2.60	.087	.04	.85	.63	.30	Trace.	.30	
	65.3937	2.5594	.0856	0394	.8367	.6202	.2953	Trace.	.2953	1.56
Zenith	64.715	.....	.0403	.....	.....	.....	.....	.....	.....	
	61.0378	.....	.0380	.....	.....	.....	.....	.....	.....	5.682

NOTE—These are official analyses prepared by association of ore dealers; star indicates analyses expected for 1900. Upper figures when dried at 212°; lower when in natural condition.

SHIPPING MEASURES.

VARIOUS MATTERS BEFORE CONGRESS THAT ARE OF INTEREST TO VESSEL MEN —LIGHTS ON STEAM PILOT VESSELS.

Washington, D. C., Feb. 28.—The act relating to lights on steam pilot vessels has been passed and approved. It provides that a steam pilot vessel, when engaged on her station on pilotage duty and in waters of the United States, and not at anchor, shall, in addition to the lights required for all pilot boats, carry at a distance of 8 feet below her white masthead light a red light, visible all around the horizon and of such a character as to be visible on a dark night, with a clear atmosphere, at a distance of at least two miles, and also the colored side lights required to be carried by vessels when under way. When engaged on her station on pilotage duty and in waters of the United States and at anchor she shall carry, in addition to the lights required for all pilot boats, the red light above mentioned, but not the colored side lights. When not engaged on her station on pilotage duty she shall carry the same light as other steam vessels.

Some time ago when delegates to the annual meeting of the National Association of Master Pilots of Steam Vessels were in Washington they called attention to the fact that smoke from certain factories in New York harbor was so befogging the atmosphere as to render useless the aids to navigation established by the government. Accordingly they petitioned congress for relief. Representative Muller has just introduced a bill to empower the supervisor of the harbor of New York to arrest any like offender after a notice of thirty days has been given to him to desist. The penalty upon conviction is a fine of not less than $500 nor more than $2,500, or imprisonment at hard labor from thirty days to six months.

The senate committee on commerce has recommended the passage of a bill to create an additional life saving district. The purpose of the bill is to subdivide the third life saving district. The proposed district is to embrace the coasts of Rhode Island and Fisher's island, a small island south of Connecticut near the entrance to Long Island sound, on which congress has authorized a new station to be established. The proposed district will embrace nine stations, three of which will be on Block island, widely separated from the main land, one on Fisher's island and the remaining five at various points on the coast of Rhode Island.

A bill to establish light and fog stations to mark the main southern entrance of the new breakwater at Buffalo has been recommended for passage by the senate committee of commerce.

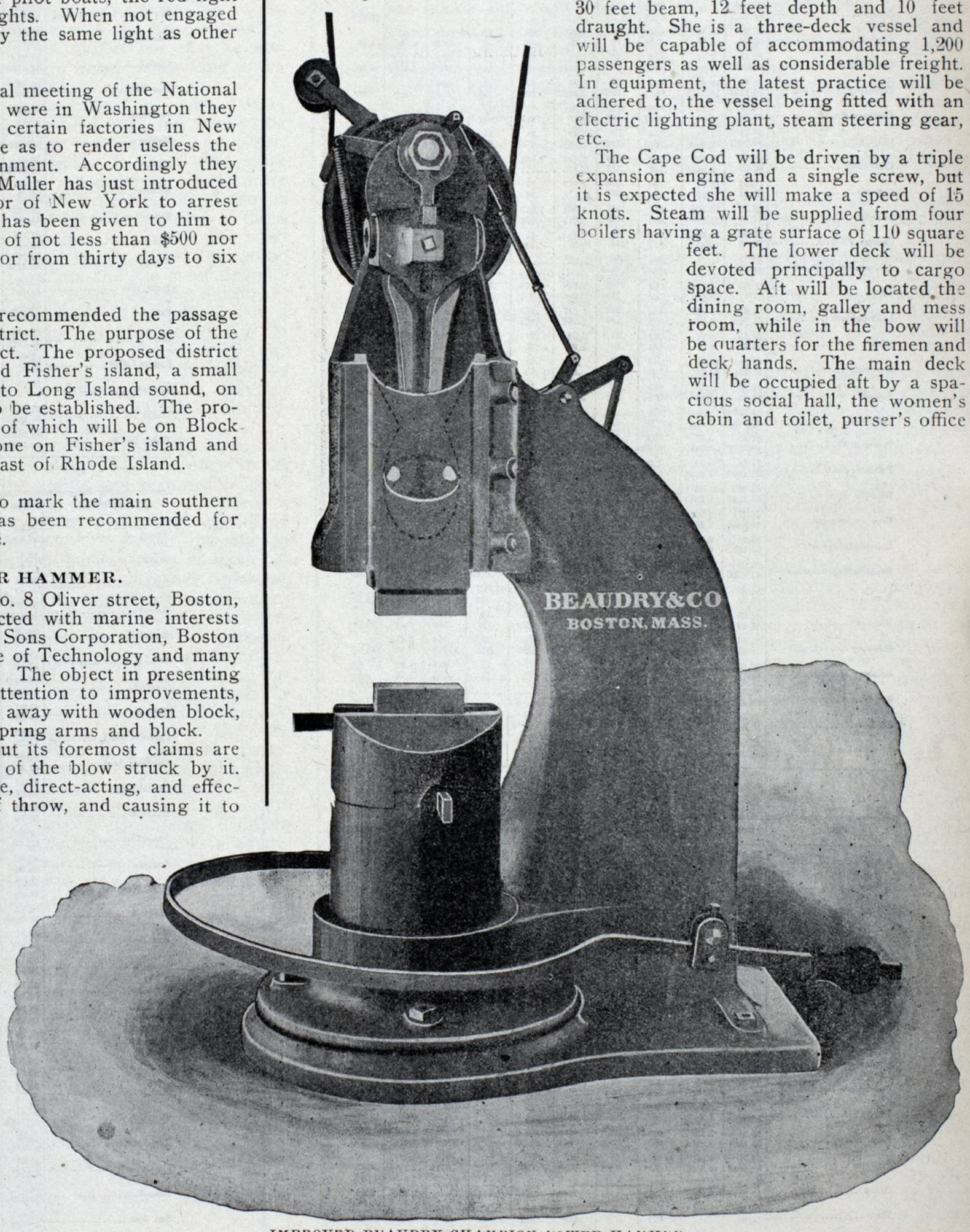
BEAUDRY CHAMPION POWER HAMMER.

This hammer, made by Beaudry & Co., No. 8 Oliver street, Boston, is already in use in so many concerns connected with marine interests (American Ship Windlass Co., Geo. Lawley & Sons Corporation, Boston & Lockport Block Co., Massachusetts Institute of Technology and many others) that it is not by any means a new tool. The object in presenting an illustration of it at this time is to direct attention to improvements, which include lengthening of the frame, doing away with wooden block, enlargement of anvil block and new shape of spring arms and block.

This hammer has many claims to favor, but its foremost claims are the superior elasticity and the perfect control of the blow struck by it. These are obtained by a device which is simple, direct-acting, and effective, allowing the ram the greatest freedom of throw, and causing it to rebound the instant the blow is struck. The operator has constant and perfect control of the force of the blow, which may be of any degree from very light to very heavy (according to the pressure on the foot treadle), and on widely varying thicknesses of stock, without change of adjustment. The ram has no reaction or jump. The hammer requires very light power. Its simple design, the unusual strength of its parts and thorough workmanship ensure permanent durability.

This hammer has no beam, no saddle, no rubber cushions or leather straps, no coil springs, nor any form of spring and link connections of numerous wearing parts. The ram or "head" is of steel, and has an internal curved track of ( ) shape. The two spring arms, with rolls at their lower extremities, operate within the ram upon this curved track and serve to lift and throw the ram, which, with increased speed of the hammer, acquires increased travel and force of blow. The simple, positive action of the spring arms perfectly controls the ram, and causes it to rebound the instant the blow is struck, without reaction or jump nor sudden undue strain on any of the hammer parts. The box pillar frame is very rigid, occupying small floor space, and requiring only a foundation of moderate size, of which blueprint plan is supplied when desired. The anvil is an independent casting having no connection to the frame, thus preventing crystallization of the hammer parts. The crank shaft, of large diameter, runs in a hard bronze bushing chambered for oil. The crank pin is adjustable for varying lengths of stroke. The connecting rod runs on a bronze sleeve. The connecting rod, spring box and ram are steel castings. The spring arms are forged from Swedish steel and have hardened tool steel rolls. The tension on the spring arms is adjusted by two tension nuts in the spring box.

The heavy ram guides are cast solid with the frame and have an adjustable brass gib and a positive oiling device. The ram is adjustable for varying heights above the dies. The full stroke can be had on a piece 4 inches square as readily as on a piece ½ inch in thickness, and no change in adjustment is required except for unusually heavy or special work. The anvil has an independent adjustable shoe die. Full length bars can be worked either way of the dies. The ram is counterbalanced by weight in the pulley. The positive brake will stop the hammer almost instantly, and will hold the ram at any desired position of its stroke. The hammer is direct-acting. It can be made to run at the will of the operator at a high speed and to deliver blows from one pound to its full capacity, which, with the ready adjustability of the machine to receive large or small work, its simple, durable construction and light power used makes it a most economical running hammer.



IMPROVED BEAUDRY CHAMPION POWER HAMMER.

NEW STEAMER CAPE COD.

The steamer Cape Cod, nearing completion at the yard of A. D. Story, Essex, Mass., will be, when placed in service, one of the best of the excursion boats running out of Boston. The vessel is building for the Boston, Plymouth & Providence Steamboat Co., which was recently incorporated under the laws of the state of Delaware with an authorized capital of $250,000. The Cape Cod is 165 feet in length over all, 30 feet beam, 12 feet depth and 10 feet draught. She is a three-deck vessel and will be capable of accommodating 1,200 passengers as well as considerable freight. In equipment, the latest practice will be adhered to, the vessel being fitted with an electric lighting plant, steam steering gear, etc.

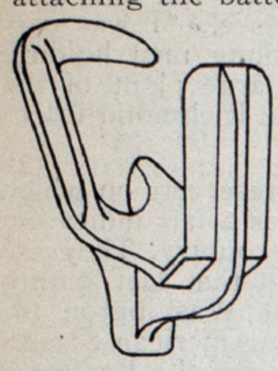
The Cape Cod will be driven by a triple expansion engine and a single screw, but it is expected she will make a speed of 15 knots. Steam will be supplied from four boilers having a grate surface of 110 square feet. The lower deck will be devoted principally to cargo space. Aft will be located the dining room, galley and mess room, while in the bow will be quarters for the firemen and deck hands. The main deck will be occupied aft by a spacious social hall, the women's cabin and toilet, purser's office and two large staterooms. On the saloon deck will be eighteen staterooms and a saloon, while on the boat deck will be located two large staterooms, in addition to rooms for the captain and mate. The contract calls for the delivery of the vessel early in June.

Officers of the new company are Lorenzo D. Baker, president; Isaiah C. Young, treasurer; J. R. Bacon, general manager, and Henry Hutchinson, secretary. The company will also build a vessel of similar dimensions for service on the Plymouth route, but the contract for this ship has not been let as yet.

New quarters have been provided in a building on Pennsylvania avenue in Washington for draughtsmen of the bureau of construction and repair, navy department. Recently the work of this branch of the bureau has increased to such an extent as to necessitate the employment of additional draughtsmen and, owing to limited accommodations, a number of these draughtsmen have been quartered in remote parts of the navy department building. The new quarters will provide much better facilities for work and there will be telephonic communication with the office of the chief constructor.

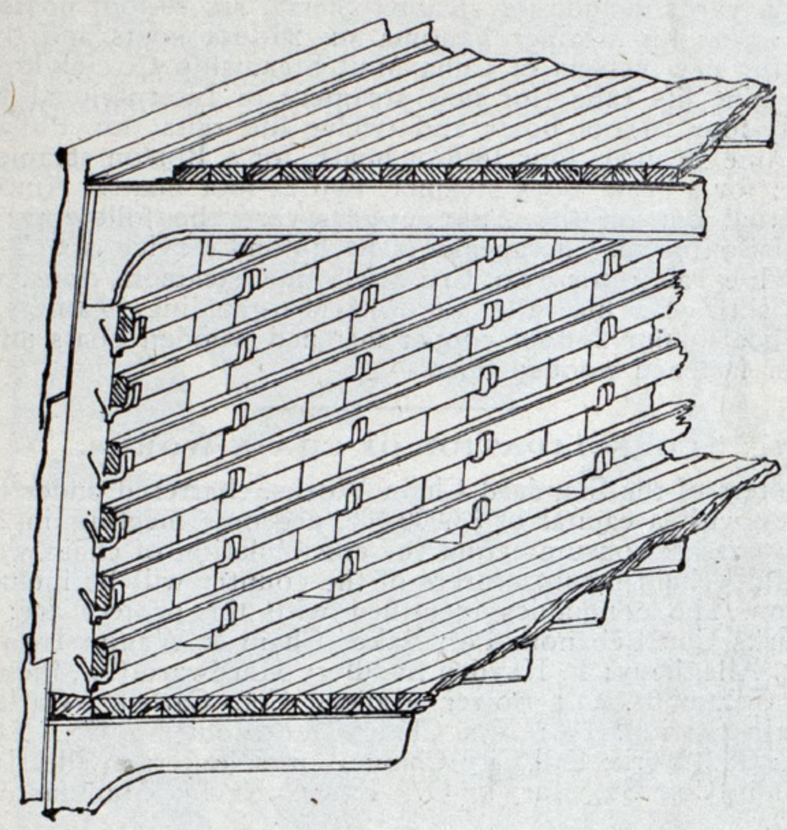
PORTABLE CARGO BATTEN CLEAT.

The accompanying cut shows a new and cheap cargo batten cleat for attaching the batten in ships' holds in a portable manner. This cleat is



for an angle bulb frame and is a very simple casting, only requiring to be hooked in a hole in the frame when it is ready for use. Another form of the portable cargo batten cleat is made for vessels having the ordinary form of reverse frame bar or reverse flange. Either form of these batten cleats is equally well adapted to the purpose, which undoubtedly will be greatly appreciated by ship builders and owners, as it requires but a short time to remove and replace them and avoids the unnecessary loss of bolts and battens. It often happens that a vessel is neglected in the interior, due mainly to the difficulty or removing battens when bolted on. It will also be noticed that when the nature of the cargo demands the battens and cleats can be entirely removed.

This system of securing cargo battens is already in use in the latest vessel built for the Porto Rico Steamship Co., and is being installed in



three new steamers building for the New York & Cuba Mail Steamship Co.; also in three steamers being built for the Oceanic Steamship Co. of San Francisco. Joshua W. Atlee of Riverton, N. J., is the patentee.

TEST OF THE SOMERS.

The torpedo boat Somers, which was purchased by the United States government in England at the outbreak of the Spanish war, but which did not arrive in this country until the war was over, was given a dock trial at the Brooklyn navy yard a few days since. The propeller made 250 revolutions per minute and the test indicated that the speed of the Somers would not fall below 20 knots an hour and might reach 23 knots, the speed at which the Somers has been officially rated. Soft coal was used. The vessel will have her final test in the lower bay at New York and if it is pronounced satisfactory by the board of experts she will be equipped with a torpedo tube and guns and placed in commission early in the spring.

The Somers is built in accordance with the most approved German practice and differs materially from vessels of her class built in American ship yards. Her boiler is of the locomotive type and she has a single screw driven by a compound engine. Everything on the vessel is of standard type.

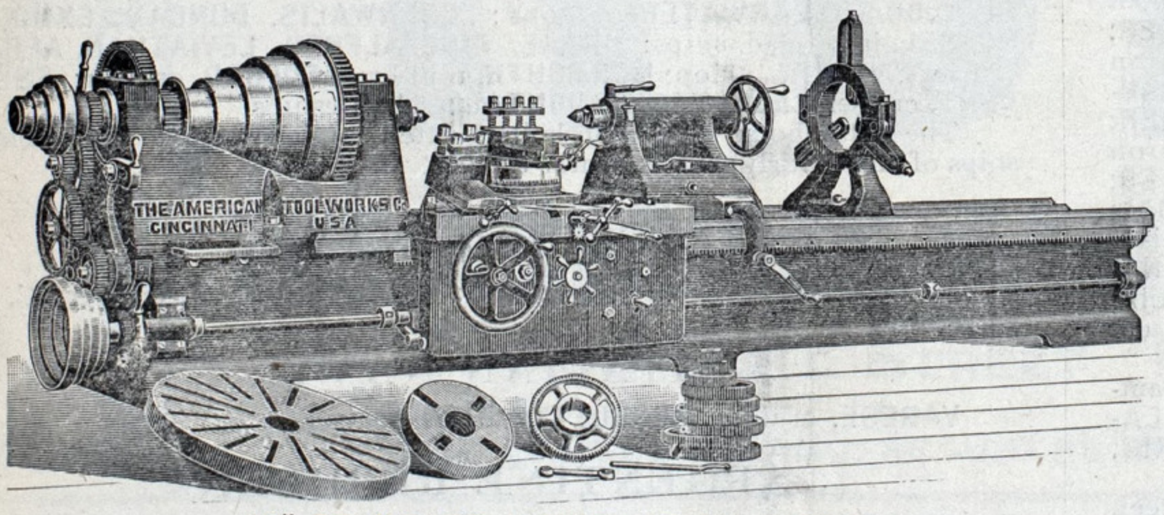
The torpedo boat Dupont arrived at New York from Newport a few days ago, having developed a leak around the rivets of one of the struts which support her screw shafting aft. The light plate to which the strut is attached shows evidence of general weakening and is to be replaced.

FOR CLASSIFICATION IN GREAT LAKES REGISTER.

Following is a list of vessels that have applied for classification in the Great Lakes Register during January and February, 1900: Steamers —Gettysburg, Philetus Sawyer, City of London, J. C. Gilchrist, Cumberland, I. W. Nicholas, John N. Glidden, Wm. Chisholm, Philip Minch, Onoko, Quito, Jay Gould, City of Traverse, Peerless, Osceola, Arizona, Oscoda, City of Alpena, City of Cleveland, City of Detroit, City of Mackinac, City of the Straits, R. J. Hackett, Forest City, Neshoto, Marquette, W. B. Morley, G. G. Hadley, Phenix, Panther, W. P. Ketcham, Oregon. Schooners—S. H. Foster, Oak Leaf, Oliver Mitchell, Athens, Belle Hanscom, Dundee, Nelson Bloom, Ida Corning, Plymouth, Ed Kelly, C. G. King, Bertha Barnes, Shawnee, Ashland, William McGregor, John M. Hutchinson, R. Hallaran, J. I. Case, A. T. Bliss, Parana.

Rumors which have been in circulation for some time past to the effect that a new dry dock and repair plant of large dimensions would, in the near future, be established in the vicinity of New York city, would seem likely to ere long be verified. The old property of the Atlantic Yacht Club in the Bay Ridge district of Brooklyn was sold to the Moss Iron Works & Dry Dock Co., a few days ago, for $300,000. It is 360 feet in length by 330 feet in depth and has an excellent water front along one side. Extending out into the water 700 feet is a bulkhead basin. The riparian rights extend 1,480 feet from the shore front. Title to the property will be taken about April 15, and immediately afterward, it is said, the company will begin building a dry dock capable of taking the largest ships that come to the harbor as well as providing for the heaviest vessels in the navy.

Tools for Economical Production.



36″ STANDARD LATHE—HEAVY PATTERN.

We build complete lines of Machine Tools for machine shop equipments, viz:

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CLEVELAND: The Strong, Carlisle & Hammond Co.
BOSTON STORE: 36 Federal Street.
BALTIMORE: The Fairbanks Co.

SAN FRANCISCO: Henshaw, Bulkley & Co.
DENVER AND SALT LAKE CITY: The Mine & Smelter Supply Co.
LONDON: Alfred Herbert, Ltd., 7 Leonard St., Finsbury, E. C.
DÜSSELDORF: de Fries & Co., Act. Ges., Graf Adolf Strasse, 83-87

ANTWERP: Nyssens Fréres, 33 Rue des Peignes.
BERLIN: de Fries & Co., Act. Ges., Kloster Strasse, 13-15.
PARIS: Roux Fréres & Cie., 54 Boulevard du Temple.
MOSCOW: Alfred Stucken.

ANALYSES OF LAKE SUPERIOR IRON ORES.

MARQUETTE RANGE.

ORE.	IRON	SILICA	PHOS.	MANG.	ALUMINA	LIME	MAGNESIA	SULPHUR	LOSS BY IGNITION	MOIST.
Abbottsford*	64.22	4.42	.033	.18	1.60	.31	.17	.014	.....	
	62.6530	4.3121	.0321	.1756	1.6487	.3024	.1658	.0136	.....	2.44
Alford*	63.74	3.39	.052	.35	1.83	.31	.20	.020	.....	
	55.4856	2.9509	.0452	.3046	1.5930	.2698	.1741	.0174	.....	12.95
Angeline, Hard	66.71	2.19	.016	.11	1.47	.10	.05	.018	.66	
	63.3278	2.0789	.0151	.1044	1.3954	.0949	.0474	.0123	.6265	5.07
Angeline, Hematite	64.40	4.05	.045	.32	1.31	.15	.09	.012	2.01	
	57.7539	3.6320	.0403	.2869	1.1748	.1345	.0807	.0107	1.8025	10.32
Angeline, South	62.17	5.04	.099	.40	1.56	.18	.12	.025	3.40	
	54.6722	4.4321	.0870	.3517	1.3718	.1582	.1055	.0219	2.9899	12.06
Bell	39.985	38.27	.0332	.22	1.28	.13	.16	.028	2.29	
	38.853	37.18	.0322	.21	1.14	.12	.15	.027	2.22	2.83
Bedford*	59.05	8.84	.122	.52	1.49	.41	.31	.027	.....	
	51.9640	7.7792	.1073	.4576	1.3112	.3608	.2728	.0237	.....	12.00
Beresford*	63.61	4.88	.105	.39	2.57	.43	.43	.013	.....	
	62.8721	4.8233	.1037	.3854	2.5401	.4250	.4250	.0128	.....	1.16
Buffalo	60.973	.....	.1069	.....	.....	.....	.....	.....	.....	
	53.3013	.....	.0934	.....	.....	.....	.....	.....	.....	12.582
Cameo	58.826	.....	.1162	.....	.....	.....	.....	.....	.....	
	51.3627	.....	.1014	.....	.....	.....	.....	.....	.....	12.687
Cambria	60.20	6.49	.056	.31	2.03	.88	.37	.010	2.53	
	53.46	5.76	.050	.28	1.80	.78	.33	.0089	2.25	11.20
Cambridge	59.71	7.10	.610	.42	1.25	2.50	.52	.004	1.81	
	50.5803	6.0144	.5167	.3557	1.0588	2.1177	.4404	.0033	1.5332	15.29
Castleford*	58.64	10.43	.094	.36	2.87	.40	.40	.020	.....	
	58.1356	10.3403	.0931	.3569	2.8453	.3965	.3965	.0198	.....	.86
Champion No. 1*	64.00	4.55	.060	.20	2.38	.32	.29	.013	.....	
	63.44	4.51	.0594	.198	2.36	.317	.287	.0128	.....	.88
Chatford*	50.72	17.70	.105	.78	1.25	.31	.31	.027	.....	
	44.9683	15.6928	.0930	.6915	1.1082	.2748	.2748	.0239	.....	11.34
Cliffs Shaft	60.90	4.030	.109	.384	2.446	1.148	1.339	.025	2.710	
	60.00	3.970	.107	.378	2.410	1.131	1.319	.024	2.670	1.47
Comrade	56.51	11.11	.126	.073	3.817	.27	.70	.037	2.70	
	55.89	10.99	.124	.072	3.775	.26	.69	.036	2.67	1.09
Imperial	52.70	12.890	.281	.161	1.004	1.027	1.218	.018	7.470	
	47.95	11.730	.255	.146	.913	.934	1.108	.016	6.797	9.00
Jackson Pit 7	55.00	14.38	.076	.37	2.49	.14	.11	.022	3.73	
	51.05	13.35	.071	.34	2.31	.13	.10	.020	3.46	7.18
Jackson, So. Silica	43.50	.....	.055	3.50	.....	.....	.....	.....	.....	
	40.0417	.....	.0508	3.2475	.....	.....	.....	.....	.....	7.50
Lake	59.90	6.010	.100	.443	2.784	.408	.597	.017	3.570	
	51.61	5.178	.086	.381	2.398	.351	.514	.014	3.075	13.84
Lake Bessemer	63.67	5.460	.040	.295	1.447	.230	.226	.016	1.400	
	55.74	4.779	.035	.258	1.266	.201	.197	.014	1.225	12.46
Lillie	62.55	5.14	.077	.37	2.22	.28	.09	.011	2.40	
	55.61	4.57	.068	.33	1.97	.25	.080	.010	2.13	11.10
Marquette	42.793	35.37	.050	.25	.99	.21	.21	.021	1.67	
	40.251	33.26	.047	.23	.93	.19	.19	.019	1.57	5.94
Norfolk*	55.00	14.25	.055	.17	3.30	.57	.56	.032	.....	
	54.50	14.12	.0544	.168	3.27	.56	.55	.0317	.....	.91
Peninsular	52.00	.....	.080	.....	.....	.....	.....	.....	.....	
	47.8400	.....	.0736	.....	.....	.....	.....	.....	.....	8.00
Princeton No. 1	62.81	5.95	.063	.14	1.25	.80	.68	.004	1.69	
	53.6962	5.0866	.0538	.1196	1.0686	.6839	.5813	.0034	1.4447	14.51
Princeton No. 2	61.63	8.50	.109	.24	1.21	.70	.54	.005	2.60	
	53.1065	7.3244	.0939	.2068	1.0426	.6031	.4653	.0043	2.2404	13.83
Republic Special	67.82	1.30	.021	Trace	.63	.15	.08	.045	.60	
	67.5148	1.2941	.0209	Trace	.6271	.1493	.0796	.0447	.5973	.45
Republic Specular	66.77	2.70	.037	.09	.93	.17	.12	.01	.35	
	66.2558	2.6792	.0367	.0893	.9228	.1686	.1190	.0099	.3473	.77
Republic Kingston	63.84	6.40	.041	.16	1.08	.40	.33	.028	.19	
	63.1505	6.3308	.0405	.1582	1.0683	.3956	.3264	.0276	.1879	1.08
Republic Magnetic, (Non-Bess.)*	69.00	3.23	.12	.147	.664	.20	.216	.021	.46	
	68.6550	3.128	.1194	.1462	.6606	.1990	.2149	.0208	.4577	.50
Rose	61.05	6.33	.117	.257	2.379	.42	.061	.018	2.98	
	53.66	5.56	.103	.226	2.091	.37	.054	.016	2.62	12.10
Richmond	44.00	35.06	.041	.15	.52	.30	.15	.006	1.50	
	43.12	34.36	.040	.15	.51	.29	.15	.006	1.47	2.00
Salisbury	61.87	5.570	.092	.161	1.807	.262	.147	.014	2.910	
	52.65	4.740	.078	.137	1.537	.222	.125	.011	2.47	14.90
Salisbury Bessmer*	63.60	3.43	.044	.25	1.38	.13	.18	.017	4.45	
	54.11	2.91	.037	.21	1.17	.11	.15	.014	3.78	14.91
Scotch	59.00	.....	.....	.....	.....	.....	.....	.....	.....	
	58.41	.....	.....	.....	.....	.....	.....	.....	.....	1.00
Sheffield	60.45	10.69	.021	.11	1.57	.10	.09	.026	1.03	
	59.0354	10.4398	.0205	.1074	1.5332	.0976	.0878	.0253	1.0058	2.34
Tilden Silica	42.50	37.49	.029	.103	.908	.150	.142	.012	.800	
	41.28	36.41	.028	.100	.882	.145	.137	.011	.777	2.86

MESABA RANGE.

ORE.	IRON	SILICA	PHOS.	MANG.	ALUMINA	LIME	MAGNESIA	SULPHUR	LOSS BY IGNITION	MOIST.
Adams	63.80	3.00	.034	.41	1.17	.12	.05	.002	3.74	
	57.30	2.69	.031	.37	1.05	.11	.04	.0018	3.36	10.19
Admiral	64.20	5.04	.028	.31	.41	.35	.27	.004	2.06	
	59.20	4.65	.026	.29	.38	.32	.25	.004	1.90	7.70
Ainslie	62.47	3.47	.077	.71	2.57	.21	.15	.020	3.17	
	56.65	3.15	.070	.64	2.33	.19	.14	.018	2.87	9.31
Auburn	64.10	2.86	.049	.43	1.80	.53	.27	.010	2.44	
	50.9400	2.5405	.0435	.3820	1.5089	.4708	.2398	.0089	2.1675	11.17
Audrey	62.15	3.24	.058	.85	1.86	.62	.23	.007	4.00	
	54.2383	2.8275	.0506	.7418	1.6232	.5411	.2007	.0061	3.4908	12.73
Beaver	62.66	3.53	.0794	.34	1.92	.20	.13	.015	3.90	
	54.865	3.09	.0695	.29	1.68	.17	.10	.013	3.27	12.44
Biwabik	63.56	3.00	.038	.49	.95	.12	.07	.006	3.41	
	58.4307	2.7579	.0349	.4504	.8733	.1103	.0643	.0055	3.1348	8.07
Canton	60.95	3.16	.048	.44	.84	.64	.18	Trace.	7.10	
	53.6909	2.7836	.0422	.3876	.7400	.5638	.1586	Trace.	6.2544	11.91
Commodore	63.60	4.21	.038	.44	1.21	.34	.12	.007	3.39	
	56.73	3.76	.034	.39	1.08	.30	.11	.006	3.02	10.80
Commodore Non-Bess	62.70	4.21	.058	.44	1.29	.34	.12	.006	3.72	
	55.80	3.75	.052	.39	1.15	.30	.11	.005	3.31	11.00
Duluth	60.19	5.12	.048	.90	1.24	.15	.08	.011	6.90	
	52.30	4.45	.042	.78	1.07	.13	.07	.0096	6.00	13.11
Fayal	63.41	3.15	.035	.63	.81	.42	.19	None.	4.10	
	56.8597	2.8246	.0314	.5649	.7263	.3766	.1704	None.	3.6765	10.33
Franklin	62.78	4.85	.040	.49	1.03	.30	.46	.016	3.41	
	58.5046	4.5197	.0372	.4566	.9598	.2795	.4286	.0149	3 1777	8 81
Genoa	63.42	3.38	.030	.50	.86	.47	.16	Trace.	3.23	
	57.3444	3.0582	.0271	.4521	.7776	.4250	.1447	Trace.	2.9206	9.58
Hale*	60.00	5.00	.080	.55	.52	1.58	.....	.016	.....	
	54.00	4.50	.072	.495	.468	1.422	.....	.014	.....	10.00
Hartley	64.74	2.50	.038	.41	1.29	.18	.04	.007	3.10	
	57.77	2.23	.034	.37	1.15	.16	.035	.006	2.77	10.76
Hibbing	64.85	2.68	.033	.46	1.40	.14	.13	.009	2.31	
	57.92	2.39	.029	.41	1.25	.13	.12	.008	2.06	10.69
Juniata	58.971	.....	.0578	.401	.....	.....	.....	.....	.....	
	50.3022	.....	.0493	.3420	.....	.....	.....	.....	.....	14.700
Kanawha*	60.00	5.50	.067	.46	1.10	1.40	.25	.004	2.00	
	54.00	4.95	.060	.414	.99	1.26	.225	.004	1.80	10.00
Malta	62.60	4.07	.029	.46	.86	.64	.22	Trace.	2.78	
	57.5795	3.7436	.0267	.4231	.7910	.5887	.2024	Trace.	2.5570	8.02
Mountain	62.830	.....	.0474	.307	.....	.....	.....	.....	.....	
	53.9640	.....	.0407	.2636	.....	.....	.....	.....	.....	14.111
Oliver	61.893	.....	.0576	.348	.....	.....	.....	.....	.....	
	53.2991	.....	.0496	.2996	.....	.....	.....	.....	.....	13.885
Penobscot	61.435	6.44	.0335	.46	1.43	.20	.10	.013	3.39	
	53.878	5.64	.0293	.40	1.25	.17	.08	.011	2.97	12.30
Pillsbury	62.32	5.00	.028	.30	1.29	.11	.14	.005	3.80	
	56.67	4.55	.025	.27	1.17	.10	.13	.0045	3.46	9.06
Preble	59 400	.....	.0840	1.345	.....	.....	.....	.....	.....	
	51.7718	.....	.0732	1.1722	.....	.....	.....	.....	.....	12.842
Roberts	61.35	7.46	.028	.44	1.07	.46	.19	.008	1.97	
	55.78	6.77	.0254	.40	.973	.418	.173	.007	1.79	9.08
Saintry*	62.50	4.75	.069	.30	1.90	.19	.11	.01	.....	
	56.25	4.27	.062	.27	1.71	.17	.099	.009	.....	10.00
Sellers	63.95	3.82	.039	.46	1.29	.17	.13	.032	2.45	
	57.72	3.45	.035	.42	1.16	.15	.12	.029	2.21	9.74
Sparta	64.08	3.90	.030	.37	.84	.53	.15	.006	1.57	
	59.0561	3.5942	.0276	.3410	.7741	.4884	.1382	.0055	1.4469	7.84
Stevenson*	63 40	5.16	.040	.32	.62	.24	.18	.009	3.20	
	57.06	4.59	.036	.288	.558	.216	.162	.008	2.88	10.00
Top Brown	61.26	4.04	.065	1.30	1.29	.55	.15	.007	4.35	
	55.2443	3.6433	.0586	1.1723	1.1633	.4960	.1353	.0063	3.9228	9.82
Vulcan	62.55	4.27	.042	.94	.....	.....	.....	Trace.	.....	
	57.0018	3.8913	.0383	.8566	.....	.....	.....	Trace.	.....	8.87
West Drift	63.84	2.51	.052	.72	.....	.....	.....	Trace.	.....	
	57.7688	2.2713	.0471	.6515	.....	.....	.....	Trace.	.....	9.51

GOGEBIC RANGE.

ORE.	IRON	SILICA	PHOS.	MANG.	ALUMINA	LIME	MAGNESIA	SULPHUR	LOSS BY IGNITION	MOIST.
Ashland*	63.00	.....	.045	.....	.....	.....	.....	.....	.....	
	55.44	.....	.0396	.....	.....	.....	.....	.....	.....	12.00
Atlantic*	62.77	4.16	.043	1.04	1.11	.19	.105	.015	.....	
	55.2438	3.6612	.0378	.9153	.9769	.1672	.0924	.0132	.....	11.99
Aurora	61.81	5.48	.027	.43	1.11	.07	.10	.010	4.02	
	55.72	4.94	.024	.39	1.00	.063	.09	.009	3.62	9.86
Best	55.482	13.94	.056	1.00	1.62	.35	.26	.025	3.03	
	48.28	12.13	.0487	.87	1.40	.30	.22	.021	2.63	12.98
Bonnie	53.45	11.04	.0275	5.11	1.40	.14	1.10	.025	3.51	
	47.372	9.78	.0243	4.52	1.24	.12	.97	.022	3.11	11.37
Brotherton	63.03	7.04	.029	.405	.756	.400	.046	.009	1.150	
	56.27	6.292	.026	.362	.676	.358	.041	.008	1.03	10.73
Buckeye	58.29	10.50	.059	.43	1.97	.14	.46	.025	2.55	
	50.94	9.17	.052	.38	1.72	.12	.40	.022	2.23	12.61
Cary Empire	57.79	4.54	.057	3.97	.77	.18	.10	.005	5.75	
	52.2306	4.1033	.0515	3.5881	.6959	.1627	.0904	.0045	5.1969	9.62
Colby No. 1	57.66	3.61	.064	6.12	1.345	.34	.28	.009	6.94	
	51.89	3.25	.058	5.51	1.211	.31	.25	.0081	6.25	10.00
Colby No. 2	60.37	3.74	.092	2.80	1.28	.17	.23	.006	4.60	
	54.94	3.40	.084	2.55	1.16	.15	.21	.005	4.19	9.00
Cass*	53.65	8.14	.053	7.22	.86	.21	2.17	.019	3.13	
	47.335	7.41	.0467	6.67	.75	.18	1.91	.016	2.76	11.77
Day	62.370	.....	.0723	.....	.....	.....	.....	.....	.....	
	55.8061	.....	.0646	.....	.....	.....	.....	.....	.....	10.524
Fairfax	63.287	.....	.0736	.756	.....	.....	.....	.....	.....	
	54.6774	.....	.0635	.6531	.....	.....	.....	.....	.....	13.604
Globe	64.23	6.68	.117	.19	.....	.....	.....	.....	.....	
	56.5224	5.8784	.1029	.1672	.....	.....	.....	.....	.....	12.00
Iron Belt	60.66	8.35	.045	.35	1.60	.18	.13	.011	2.40	
	53.59	7.38	.040	.31	1.41	.16	.11	.010	2.12	11.66
Lawrence	61.83	5.90	.057	.57	1.38	.15	.13	.020	3.30	
	55.61	5.31	.051	.51	1.24	.13	.12	.018	2.97	10.06
Melrose	62.19	4.72	.0302	.91	.96	.16	.09	.018	3.86	
	55.025	4.17	.0267	.80	.84	.14	.07	.015	3.41	11.52
Mikado	56.35	15.05	.138	.35	1.10	.24	.17	.010	2.30	
	48.6582	12.9957	.1192	.3022	.9499	.2072	.1468	.0086	1.9861	13.65
Montreal	65.42	3.14	.041	.84	.71	.13	.12	.017	3.34	
	60.09	2.88	.038	.77	.65	.12	.11	.016	3.07	8.14
Newport	53.702	5.63	.0392	7.66	1.12	.17	.14	.009	5.06	
	48.267	5.06	.0352	6.88	1.00	.15	.12	.008	4.54	10.12
New Era	57.105	11.40	.0285	1.41	1.24	.19	.10	.011	3.43	
	50.44	10.06	.0251	1.24	1.09	.16	.08	.009	3.02	11.67
Norrie	62.957	.....	.0420	.....	.....	.....	.....	.....	.....	
	56.4736	.....	.0376	.....	.....	.....	.....	.....	.....	10.298
North Vein	62.58	5.50	.048	.41	1.20	.09	.08	.004	.....	
	56.26	4.94	.043	.37	1.08	.08	.07	.004	.....	10.10
Palms	61.856	5.28	.0556	.90	1.31	.17	.12	.012	3.26	
	52.633	4.49	.047	.76	1.11	.14	.10	.010	2.77	14.91
Rand	62.340	.....	.0480	3.610	.....	.....	.....	.....	.....	
	54.7968	.....	.0404	3.1731	.....	.....	.....	.....	.....	12.100
Sunday Lake*	63.00	7.00	.030	.32	1.34	.16	.06	.006	.59	
	56.07	6.23	.0267	.285	1.193	.143	.054	.005	.53	11.00
Taylor*	62.00	.....	.065	.....	.....	.....	.....	.....	.....	
	54.56	.....	.0572	.....	.....	.....	.....	.....	.....	12.00
Tilden	62.737	.....	.0476	.784	.....	.....	.....	.....	.....	
	54.2386	.....	.0411	.6777	.....	.....	.....	.....	.....	13.546
Tilden No. 8	62.358	.....	.0400	1.678	.....	.....	.....	.....	.....	
	54.1398	.....	.0347	1.4568	.....	.....	.....	.....	.....	13.179

MENOMINEE RANGE.

ORE.	IRON	SILICA	PHOS.	MANG.	ALUMINA	LIME	MAGNESIA	SULPHUR	LOSS BY IGNITION	MOIST.
Amasa	55.64	6.84	.218	.29	2.95	2.05	1.92	.015	5.30	
	53.6982	6.6013	.2104	.2799	2.8470	1.9785	1.8530	.0145	5.1150	3.49
Ajax	52.17	11.14	.0607	.86	2.22	1.56	4.70	.022	3.94	
	48.612	10.38	.0565	.80	2.06	1.45	4.37	.020	3.67	6.82
Badger	59.91	4.47	.120	.22	2.52	1.20	1.97	.100	.....	
	54.39	4.06	.110	.20	2.29	1.09	1.79	.091	.....	9.22
Barton	59.828	.....	.530	.....	.....	.....	.....	.....	.....	
	56.4752	.....	.5002	.....	.....	.....	.....	.....	.....	5.604
Bristol	50.00	6.10	.738	2.69	3.34	3.77	1.97	.033	7.95	
	46.09	5.62	.680	2.48	3.08	3.48	1.82	.030	7.33	7.82
Cedar	52.00	10.26	.190	.30	3.95	1.75	4.87	.130	3.68	
	47.59	9.39	.174	.27	3.61	1.60	4.46	.119	3.37	8.49
Chapin*	58.13	6.20	.065	.54	1.41	1.235	3.565	.019	3.22	
	54.05	5.76	.060	.485	1.31	1.145	3.31	.017	3.00	6.96
Clifford	41.01	39.10	.014	.09	.97	.49	.29	.003	.45	
	39 96	38.10	.0136	.087	.945	.48	.28	.0029	.44	2.55
Columbia No. 1	60.00	5.10	.52	.23	1.99	.61	.90	.050	4.15	
	53.28	4.52	.461	.20	1.76	.54	.79	.044	3.68	11.20
Columbia No. 2	54.48	12.15	.46	.21	1.95	1.20	.65	.049	2.56	
	48.378	10.78	.408	.18	1.73	1.09	.57	.043	2.27	11.20
Crystal Falls	58.40	4.09	.71	.31	1.40	2.62	2.02	.007	3.51	
	53.84	3.77	.655	.29	1.29	2.42	1.86	.006	3.24	7.80
Davidson	56.03	7.64	.180	.24	3.43	1.27	2.89	.080	5.00	
	50.78	6.92	.163	.22	3.11	1.15	2.62	.073	4.53	9.37
Florence	56.02	4.85	.325	.38	2.86	1.70	2.50	.125	5.44	
	51.459	4.45	.298	.34	2.62	1.56	2.29	.114	4.99	8.14
Granada	61.52	4.60	.061	.23	1.53	.36	1.63	.015	2.30	
	56.64	4.23	.056	.21	1.41	.33	1.50	.014	2.12	7.93
Great Western*	60.40	5.80	.385	.61	1.21	2.24	1.65	.009	2.43	
	55.39	5.32	.353	.56	1.11	2.05	1.51	.008	2.23	8.30
Hemlock	58.72	5.70	.272	.20	2.66	1.92	1.55	.006	2.95	
	56.4064	5.4754	.2613	.1921	2.5552	1.8444	1.4889	.0058	2.8338	3.94
Keel Ridge	40.64	37.42	.046	.20	.90	1.35	1.00	.006	.....	
	39.46	36.33	.045	.19	.87	1.31	.97	.0058	.....	2.90
Lamont	58.10	4.31	.673	.35	1.25	1.92	2.34	.009	3.60	
	53.39	3.96	.618	.32	1.15	1.76	2.15	.008	3.31	8.10
Lincoln*	60.20	5.05	.290	.66	1.67	2.29	2.35	.010	2.95	
	55.88	4.65	.267	.61	1.54	2.11	2.16	.0092	2.71	8.00
Loretto	57.067	13.20	.0205	.20	2.12	.32	.57	.062	1.59	
	52.09	12.04	.0187	.18	1.93	.29	.52	.056	1.45	8.72
Manganate	50.00	4.45	.626	4.82	2.50	2.53	2.73	.021	7.98	
	47.70	4.24	.597	4.60	2.38	2.41	2.60	.020	7.61	4.61
Millie	63.705	2.97	.0275	.12	.94	1.14	1.49	.008	2.12	
	60.092	2.80	.0259	.11	.88	1.07	1.40	.007	1.99	5.67
Nimick	62.72	4.35	.071	.22	1.25	.65	2.24	.03	1.65	
	57.71	4.00	.065	.20	1.15	.60	2.06	.027	1.52	7.99
Pewabic	63.21	5.48	.009	.11	1.04	.86	1.12	.003	1.20	
	58.7853	5.0964	.0084	.1023	.9672	.7998	1.0416	.0028	1.1160	7.00
Pewabic Genoa	45.97	32.40	.009	.09	1.30	.79	1.08	.002	1.24	
	43.5566	30.6990	.0085	.0853	1.2318	.7485	1.0233	.0019	1.1749	5.25
Quinnesec*	49.61	27.80	.028	.27	.56	.82	.48	.010	2.40	
	48.53	27.19	.027	.26	.54	.80	.47	.010	2.35	2.18
Russell	54.10	10.00	.067	.32	2.15	3.02	2.65	.032	4.57	
	50.432	9.32	.0624	.29	2.00	2.81	2.47	.029	4.26	6.78
San Jose	64.405	4.64	.014	.30	1.24	.19	.39	.027	.64	
	59.072	4.25	.0128	.27	1.13	.17	.35	.024	.58	8.28
Sheridan	55.48	7.37	.224	.25	4.48	.75	.59	.610	5.35	
	49.5880	6.5873	.2002	.2234	4.0042	.6703	.5273	.5462	4.7818	10.62
Toledo	54.21	19.80	.010	.11	1.20	.88	1.08	.004	1.20	
	50.9574	18.6120	.0094	.1034	1.1280	.8272	1.0152	.0038	1.1280	6.00
Tyrone	60.40	6.59	.088	.16	1.38	1.25	2.15	.001	2.05	
	56.1720	6 1287	.0818	.1488	1.2834	1.1625	1.9995	.0009	1.9065	7.00
Walpole	58.75	10.51	.120	.13	1.30	.79	1.96	.002	1.22	
	55.8125	9.9845	.1140	.1235	1.2350	.7505	1.8620	.0019	1.1590	5.00

VERMILLION RANGE.

ORE.	IRON	SILICA	PHOS	MANG.	ALUMINA	LIME	MAGNESIA	SULPHUR	LOSS BY IGNITION	MOIST.
Chandler	64.43	4.20	.040	.22	2.20	.63	.14	.002	.90	
	60.9250	3.9715	.0378	.2080	2.0802	.5957	.1324	.0019	.8510	5.54
Jura	62.142	.....	.0760	.....	.....	.....	.....	.....	.....	
	57.5565	.....	.0703	.....	.....	.....	.....	.....	.....	7.379
Long Lake	60.47	7.67	.044	.13	3.65	.86	.28	.012	1.45	
	56.1948	7.1277	.0409	.1208	3.3919	.7992	.2602	.0112	1.3475	7.07
Pioneer	63.506	.....	.0422	.....	.....	.....	.....	.....	.....	
	58.4534	.....	.0388	.....	.....	.....	.....	.....	.....	7.956
Red Lake	63.72	4.08	.131	.09	2.01	1.02	.34	.022	.80	
	61.8976	3.9633	.1273	.0874	1.9525	.9908	.3303	.0214	.7771	2.86
Savoy	63.452	.....	.0479	.....	.....	.....	.....	.....	.....	
	58.9887	.....	.0445	.....	.....	.....	.....	.....	.....	7.034
Vermillion	66.22	2.55	.127	.06	1.04	.92	.30	.007	.45	
	65.2598	2.5130	.1252	.0591	1.0249	.9067	.2957	.0069	.4435	1.45
Vermillion, Special	66.43	2.60	.087	.04	.85	.63	.30	Trace.	.30	
	65.3937	2.5594	.0856	0394	.8367	.6202	.2953	Trace.	.2953	1.56
Zenith	64.715	.....	.0403	.....	.....	.....	.....	.....	.....	
	61.0378	.....	.0380	.....	.....	.....	.....	.....	.....	5.682

NOTE—These are official analyses prepared by association of ore dealers; star indicates analyses expected for 1900. Upper figures when dried at 212°; lower when in natural condition.

Two more steel freighters of the very largest type for lake service have been floated within the past week. Another of the American Steamship Co.'s 500-footers (Wolvin fleet) was launched at the Lorain yard of the American Ship Building Co. on Saturday last, and at the Cleveland yard of the same company a Rockefeller steamer of about equal dimensions was to be floated today (Thursday) and to be named Gen. Orlando M. Poe. The Wolvin steamer was named J. J. Hill in honor of the president of the Great Northern railway. These are the kind of lake carriers that are fitted with quadruple expansion engines and designed to carry 8,000 to 9,000 net tons, according to draught.

A list of vessels laid up at different ports around the lakes is gotten up each year by the Marine Review for its advertising patrons. Referring to a list of this kind recently issued, Mr. Frederick Metcalf of the Chase Machine Co., says: "Please accept thanks for list of vessels in winter quarters at the lake ports. We refer to this occasionally ourselves, but there is scarcely a day at this part of the season when some engineer or captain or somebody does not wander in here with a question about where some boat is laid up, which we are pleased to be able to answer."

The Nickel Plate road has become a member of the Central Passenger Association mileage ticket bureau, and all mileage tickets properly issued by any line a member of that bureau are valid for use on that road in the same manner as on other roads that are members of that bureau.

30 Mar. 16.

VALUE OF STOCKS—LEADING IRON AND STEEL INDUSTRIALS.

Quotations furnished by HERBERT WRIGHT & Co., Cleveland, date of March 1. 1900.

NAME OF STOCK.	OPEN	HIGH	LOW	CLOSE
American Steel & Wire.....	57⅜	57½	57	57⅜
American Steel & Wire, Pfd.....	91¾	.....	.....	91¾
Federal Steel	53¼	53⅞	52½	53⅞
Federal Steel, Pfd.....	73½	74	73½	74
National Steel	47	47	46¼	46⅜
National Steel, Pfd.....	94½	.....	.....	94½
American Tin Plate	31⅞	.....	.....	31⅞
American Tin Plate, Pfd.....	.....	.....	.....	.....
American Steel Hoop.....	40½	41	40	40⅞
American Steel Hoop, Pfd.....	.....	.....	.....	.....
Republic Iron & Steel	23	23¼	23	23¼
Republic Iron & Steel, Pfd	68	.....	.....	68

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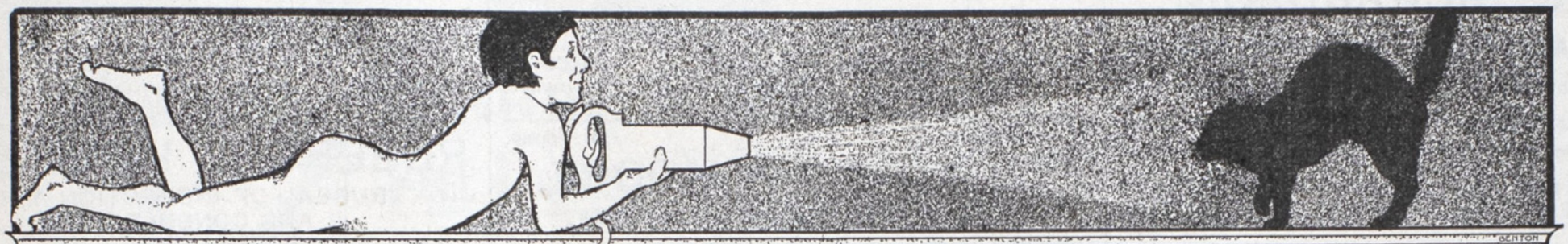

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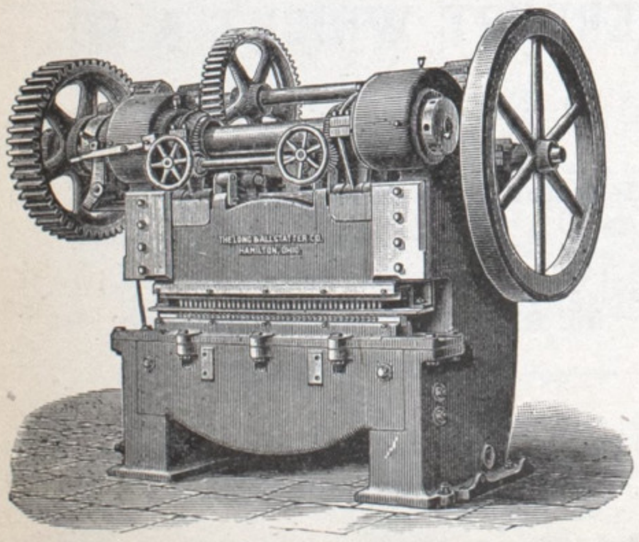

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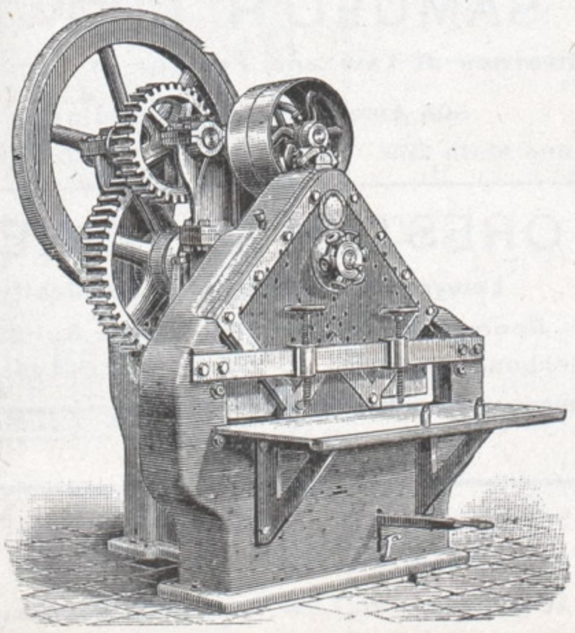

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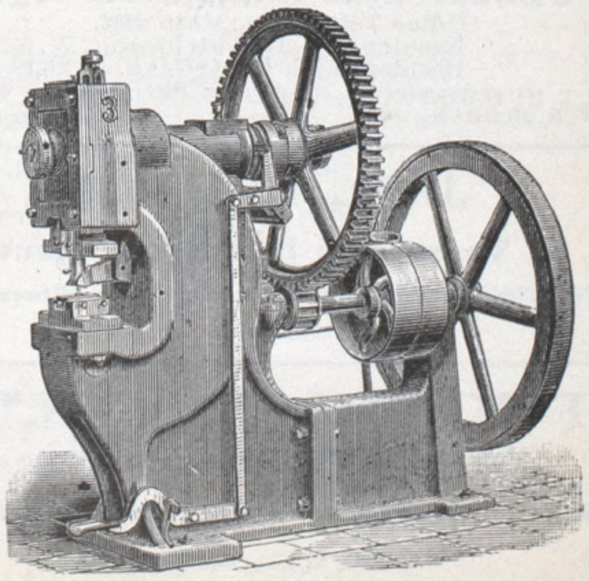

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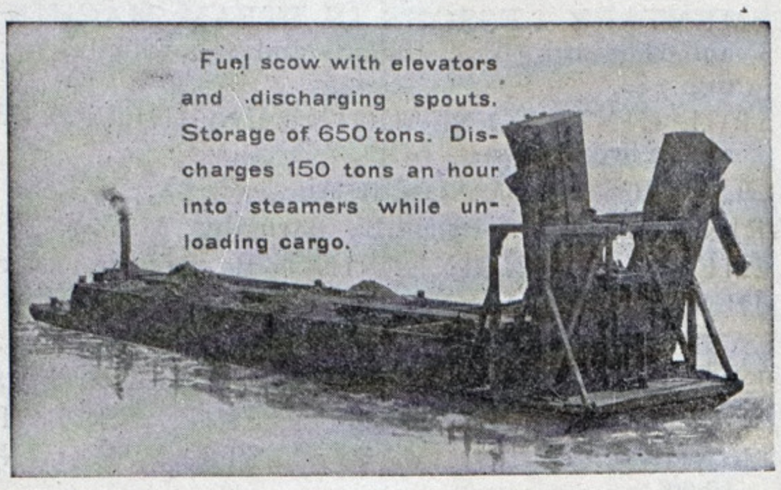

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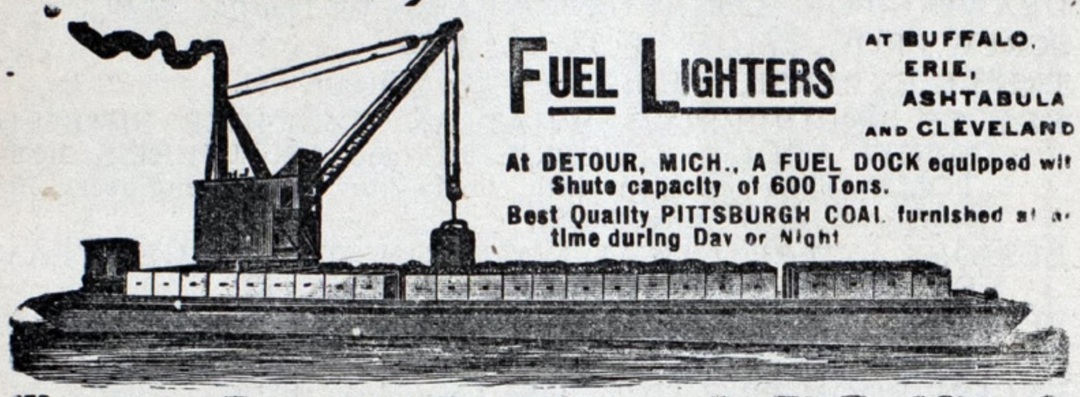

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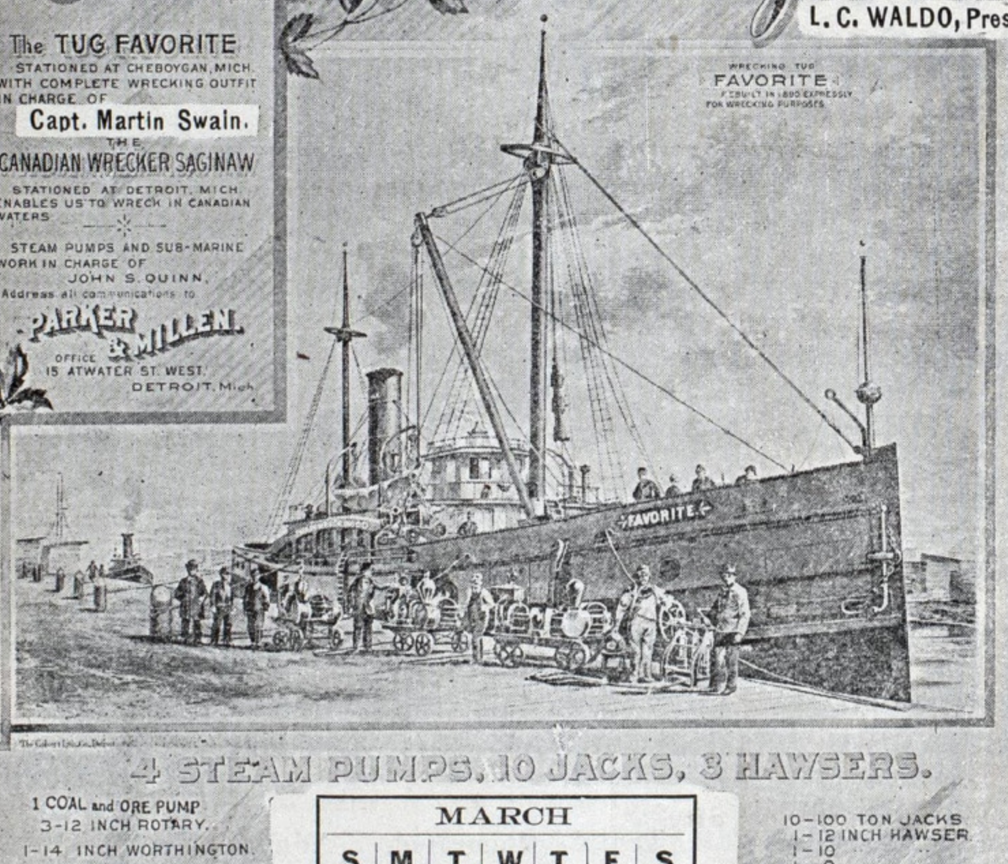

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10-100 TON JACKS
1-12 INCH HAWSER
1-10
1-9

Telegraph

Capt. MARTIN SWAIN, CHEBOYGAN, MICH.

TELEGRAPH

PARKER & MILLEN, DETROIT, MICH.

U. S. Engineer Office, 57 Park St., Grand Rapids, Mich., February 21, 1900. Sealed proposals for Repair of Pier at Charlevoix, Mich., will be received here until 3 P. M., March 23, 1900, and then publicly opened. Information furnished on application. Chester Harding, Capt., Engrs. Mar. 15.

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Treasury Department, Washington, D. C., February 20, 1900. Sealed proposals are invited and will be received at this department until 2 o'clock P. M., Tuesday, April 3, 1900, at which time and place they will be opened in the presence of attending bidders, for the construction of one steel steam propeller for the U. S. Revenue Cutter Service, for duty on the Pacific coast, to be known while in course of construction or until launched, as No. 8, R. C. S. Said vessel is to be constructed in accordance with the plans and specifications provided by the Secretary of the Treasury, which, together with form of proposal, contract, etc., may be obtained upon application to this department. Bids must be addressed to the Secretary of the Treasury and be endorsed on the envelope "Proposal for Revenue Steamer for Pacific Coast." The right is reserved to reject any or all bids and to waive defects if deemed for the interests of the government so to do. O. L. Spaulding, Acting Secretary. Mar. 8.

Office of Light-House Engineer, Mobile, Ala., Feb. 15, 1900. The wooden two-masted schooner Clover, about two hundred and fifty tons burden, will be sold at public auction in Mobile, Ala., on March 21, 1900. For information apply to Lieut. Col. A. N. Damrell, Light-House Engineer, Mobile, Ala. Mar. 1.

U. S. Engineer Office, 57 Park St., Grand Rapids, Mich., February 13, 1900. Sealed proposals for Extension and Repair of Piers at Frankfort, Mich., will be received here until 3 P. M., March 15, 1900, and then publicly opened. Information furnished on application. Chester Harding, Capt. Engrs. Mar. 8.

U. S. Engineer Office, 57 Park St., Grand Rapids, Mich., February 13, 1900. Sealed proposals for Dredging at Harbors on East Shore of Lake Michigan will be received here until 3 P. M., March 15, 1900, and then publicly opened. Information furnished on application. Chester Harding, Capt., Engrs. Mar. 8.

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